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(71)Applicant : TOSHIBA CORP

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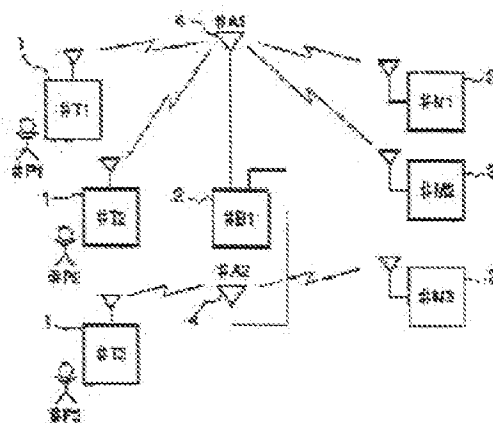
(72)Inventor : SHIMIZU MAKOTO

(54) STATION BUSINESS UNIT FAULT NOTICE SYSTEM, AND NOTICE METHOD FOR THE STATION BUSINESS UNIT FAULT NOTICE SYSTEM

(57)Abstract:

PROBLEM TO BE SOLVED: To quickly and accurately repair a station business unit in good workmanship on the occurrence of a fault in the station business unit.

SOLUTION: This fault notice system includes a plurality of base station antennas 4 each installed in each small area of the station installation that are used in a railway station installation where station business units 3 are installed, because the station installation is formed thin and long around platforms, and includes underground installation and in-building installation to provide poor propagation conditions of a radio wave. In order to warrant consecutive communication for movement between the areas, a radio base station 2 always grasps positions of radio portable terminals 1,..., (in which area (=under the coverage of the base station antenna 4) the terminal is resident) and identifies (rasps) the positions of the radio portable terminals 1,..., and the faulty station service unit 3, and allows a station person carrying a radio portable terminal 1 resident in a place closer to the faulty station service unit 3 to cope with the repair of the fault.

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CLAIMS

[Claim(s)]

[Claim 1]A station service equipment-failure informing system with which two or more radio

personal digital assistants, two or more station service apparatus, and a base transceiver station perform radio, and notify a station service equipment failure, comprising:

An antenna formed in order that the above-mentioned base transceiver station might perform two or more above-mentioned radio personal digital assistants, two or more station service apparatus, and radio. [two or more]

The 1st reception means that receives failure information from the above-mentioned station service apparatus via these antennas.

The 1st specifying means that specifies an antenna which received failure information from the station service apparatus concerned when failure information from station service apparatus is received by this 1st reception means.

A transmitting means which transmits the station service equipment-failure generation information concerned to two or more above-mentioned radio personal digital assistants when failure information from station service apparatus is received by the 1st reception means of the above.

The 2nd reception means that receives a response for which trouble-shooting correspondence from a radio personal digital assistant which received station service equipment-failure generation information transmitted by this transmitting means is good.

The 2nd specifying means that specifies an antenna which received a response for which trouble-shooting correspondence is good from each radio personal digital assistant received by this 2nd reception means.

A communication means which notifies directions of trouble-shooting to a radio personal digital assistant received with the antenna when there were an antenna and a match which compared an antenna specified by the 1st specifying means of the above with an antenna specified by the 2nd specifying means of the above, and were specified by the 1st specifying means of the above.

[Claim 2] A station service equipment-failure informing system with which two or more radio personal digital assistants, two or more station service apparatus, and a base transceiver station perform radio, and notify a station service equipment failure, comprising:

Two or more antennas formed in a prescribed position in order that the above-mentioned base transceiver station might perform two or more above-mentioned radio personal digital assistants, two or more station service apparatus, and radio.

The 1st reception means that receives failure information from the above-mentioned station service apparatus via these antennas.

The 1st specifying means that pinpoints a position of the station service apparatus concerned from received radio field intensity of two or more above-mentioned antennas when failure information from station service apparatus is received by this 1st reception means.

A transmitting means which transmits the station service equipment-failure generation information concerned to two or more above-mentioned radio personal digital assistants when failure information from station service apparatus is received by the 1st reception means of the above.

The 2nd reception means that receives a response for which trouble-shooting correspondence from a radio personal digital assistant which received station service equipment-failure generation information transmitted by this transmitting means is good.

The 2nd specifying means that pinpoints a position of each radio personal digital assistant from received radio field intensity of two or more above-mentioned antennas when a response for which trouble-shooting correspondence is good is received from each radio personal digital assistant by this 2nd reception means.

A communication means which notifies directions of trouble-shooting to a radio personal digital assistant which compares a position of the station service apparatus concerned specified by the 1st specifying means of the above with a position of each radio personal digital assistant specified by the 2nd specifying means of the above, and is in a position nearest to a position of the station service apparatus concerned.

[Claim 3] Two or more radio personal digital assistants, two or more station service apparatus,

and a base transceiver station are the notifying methods of a station service equipment-failure informing system which performs radio and notifies a station service equipment failure. When an antenna formed in order that the above-mentioned base transceiver station might perform two or more above-mentioned radio personal digital assistants, two or more station service apparatus, and radio receives failure information from the above-mentioned station service apparatus, [two or more] Specify an antenna which received failure information from the station service apparatus concerned, and the station service equipment-failure generation information concerned is transmitted to two or more above-mentioned radio personal digital assistants. A response for which trouble-shooting correspondence from a radio personal digital assistant which received this transmitted station service equipment-failure generation information is good is received. An antenna which received a response for which this received each trouble-shooting correspondence from a personal digital assistant of radio is good is specified, an antenna which received failure information from the station service apparatus concerned specified [above-mentioned], and an antenna which received a response for which trouble-shooting correspondence is good from a radio personal digital assistant of each above, [compare and] A notifying method of a station service equipment-failure informing system notifying directions of trouble-shooting to a radio personal digital assistant received with the antenna when there was a match.

[Claim 4] It is a notifying method of a station service equipment-failure informing system which a base transceiver station performs radio via a formed antenna, and reports station service equipment failures to be two or more radio personal digital assistants and two or more station service apparatus, the time of the above-mentioned base transceiver station receiving a notice of a station service equipment failure — a position of this station service apparatus — an account of the upper — from received radio field intensity of a formed antenna, [specify and] Notify two or more above-mentioned radio personal digital assistants that failure occurred to the station service apparatus concerned, and a response with good trouble-shooting from a radio personal digital assistant is received, this received each position of a personal digital assistant of radio — an account of the upper — a notifying method of a station service equipment-failure informing system notifying directions of trouble-shooting to a radio personal digital assistant which specifies from received radio field intensity of a formed antenna, and is in a position nearest to a position of station service apparatus specified [above-mentioned].

[Claim 5] A station service equipment-failure informing system with which two or more radio personal digital assistants, two or more station service apparatus, and a base transceiver station perform radio, and notify a station service equipment failure, comprising:

A memory measure a priority of each radio personal digital assistant in two or more above-mentioned radio personal digital assistants in which the above-mentioned base transceiver station carries out repair correspondence at each station service equipment failure in two or more above-mentioned station service apparatus is beforehand remembered to be.

The 1st reception means that receives failure information from the above-mentioned station service apparatus.

A transmitting means which transmits the station service equipment-failure generation information concerned to two or more above-mentioned radio personal digital assistants when failure information from station service apparatus is received by this 1st reception means.

The 2nd reception means that receives a response for which repair correspondence from a radio personal digital assistant which received station service equipment-failure generation information transmitted by this transmitting means is good. A priority of a radio personal digital assistant which carries out repair correspondence is referred to to the station service equipment failure concerned in two or more station service apparatus memorized by the above-mentioned memory measure. A control means which performs control which notifies directions of trouble-shooting to a radio personal digital assistant with the highest priority which carries out repair correspondence from each radio personal digital assistant received by the 2nd reception means of the above.

[Claim 6] A station service equipment-failure informing system with which two or more radio

personal digital assistants, two or more station service apparatus, and a base transceiver station perform radio, and notify a station service equipment failure, comprising:

A memory measure a priority of each radio personal digital assistant in two or more above-mentioned radio personal digital assistants in which the above-mentioned base transceiver station carries out repair correspondence at each station service equipment failure in two or more above-mentioned station service apparatus is beforehand remembered to be.

A transmitting means which transmits the station service equipment-failure generation information concerned to two or more above-mentioned radio personal digital assistants when failure information is received from the above-mentioned station service apparatus. When a response for which repair correspondence from a radio personal digital assistant which received station service equipment-failure generation information transmitted by this transmitting means is good is received, A control means which performs control which notifies directions of trouble-shooting to a radio personal digital assistant with the highest priority among each radio personal digital assistants received with reference to a priority of a radio personal digital assistant which carries out repair correspondence to the station service equipment failure concerned in two or more station service apparatus memorized by the above-mentioned memory measure.

[Claim 7] Two or more radio personal digital assistants, two or more station service apparatus, and a base transceiver station are the notifying methods of a station service equipment-failure informing system which performs radio and notifies a station service equipment failure. The above-mentioned base transceiver station memorizes beforehand a priority of each radio personal digital assistant in two or more above-mentioned radio personal digital assistants which carry out repair correspondence to each station service equipment failure in two or more above-mentioned station service apparatus. When failure information is received from the above-mentioned station service apparatus, the station service equipment-failure generation information concerned is transmitted to two or more above-mentioned radio personal digital assistants. A response for which repair correspondence from a radio personal digital assistant which received this transmitted station service equipment-failure generation information is good is received. A priority of a radio personal digital assistant which carries out repair correspondence is referred to to the station service equipment failure concerned in two or more station service apparatus memorized [above-mentioned]. A notifying method of a station service equipment-failure informing system performing control which notifies directions of trouble-shooting to a radio personal digital assistant with the highest priority which carries out repair correspondence from each radio personal digital assistant which received a response for which the above-mentioned repair correspondence is good.

[Claim 8] Two or more radio personal digital assistants, two or more station service apparatus, and a base transceiver station are the notifying methods of a station service equipment-failure informing system which performs radio and notifies a station service equipment failure. The above-mentioned base transceiver station memorizes beforehand a priority of each radio personal digital assistant in two or more above-mentioned radio personal digital assistants which carry out repair correspondence to each station service equipment failure in two or more above-mentioned station service apparatus. When failure information is received from the above-mentioned station service apparatus, the station service equipment-failure generation information concerned is transmitted to two or more above-mentioned radio personal digital assistants. When a response for which repair correspondence from a radio personal digital assistant which received this transmitted station service equipment-failure generation information is good is received, a priority of a radio personal digital assistant which carries out repair correspondence is referred to to the station service equipment failure concerned in two or more station service apparatus memorized [above-mentioned]. A notifying method of a station service equipment-failure informing system performing control which notifies directions of trouble-shooting to a radio personal digital assistant with the highest priority among each received radio personal digital assistants.

[Claim 9] A station service equipment-failure informing system with which two or more radio personal digital assistants, station service apparatus, and base transceiver stations perform

radio, and notify a station service equipment failure, comprising:

Two or more antennas formed in a prescribed position in order that the above-mentioned base transceiver station might perform a radio personal digital assistant and radio of the above-mentioned plurality.

The 1st reception means that receives failure information from the above-mentioned station service apparatus.

A transmitting means which transmits the station service equipment-failure generation information concerned to two or more above-mentioned radio personal digital assistants when failure information from station service apparatus is received by this 1st reception means.

The 2nd reception means that receives a response for which trouble-shooting correspondence from a radio personal digital assistant which received station service equipment-failure generation information transmitted by this transmitting means is good, A specifying means which pinpoints a position of each radio personal digital assistant from received radio field intensity of two or more above-mentioned antennas when a response for which trouble-shooting correspondence is good is received from each radio personal digital assistant by this 2nd reception means, A communication means which notifies directions of trouble-shooting to a radio personal digital assistant which compares a position of each radio personal digital assistant specified by this specifying means, and is in a position nearest to a position of the station service apparatus concerned.

[Claim 10] A station service equipment-failure informing system with which two or more radio personal digital assistants, station service apparatus, and base transceiver stations perform radio, and notify a station service equipment failure, comprising:

A memory measure a priority of each radio personal digital assistant in two or more above-mentioned radio personal digital assistants in which the above-mentioned base transceiver station carries out repair correspondence at the above-mentioned station service equipment failure is beforehand remembered to be.

The 1st reception means that receives failure information from the above-mentioned station service apparatus.

A transmitting means which transmits the station service equipment-failure generation information concerned to two or more above-mentioned radio personal digital assistants one by one according to a priority memorized by the above-mentioned memory measure when failure information from station service apparatus is received by this 1st reception means.

The 2nd reception means that receives a response for which repair correspondence from a radio personal digital assistant which received station service equipment-failure generation information transmitted by this transmitting means is good, and a control means which performs control which notifies directions of trouble-shooting to the above-mentioned radio personal digital assistant based on reception by the 2nd reception means of the above.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the notifying method of the station service equipment-failure informing system which carries out report correspondence, and a station service equipment-failure informing system, when failure occurs to station service apparatus, such as an automatic ticket vending machine formed, for example in stations, such as a railroad.

[0002]

[Description of the Prior Art] If failure occurs conventionally to the station service apparatus installed in stations, such as a railroad, the notice of a failure occurrence was transmitted by simultaneous simultaneous transmissive communication to the radio terminal which the station employee is made to carry beforehand, each station employee will be told about station service equipment-failure generating, and trouble-shooting will be requested.

[0003] When there is a response from two or more radio terminals at this time (from a station employee), it has transmitted only to the terminal (station employee) which carried out random sampling of one of the terminal (station employee) which answered the very first, and the terminals (station employee) which answered in fixed time, or chose the person corresponding to trouble-shooting by one of methods, and chose the notice and detailed fault data which direct repair.

[0004] However, there is a possibility of choosing the station employee who is in a distant place from broken station service apparatus in these selection methods, and there are a fault that repair correspondence is overdue, and a fault of choosing the station employee who is not well versed in repair of broken station service apparatus, and taking time and effort to repair.

[0005]

[Problem(s) to be Solved by the Invention] In the station service equipment-failure informing system which carries out report correspondence when failure occurs to station service apparatus, as described above. There was a problem of there having been a possibility of choosing the station employee who is in a distant place, having chosen the fault that repair correspondence is overdue, and the station employee who is not well versed in repair of broken station service apparatus from broken station service apparatus, and taking time and effort to repair.

[0006] Then, when failure occurs to station service apparatus, this invention is quick and an object of an invention is to provide the notifying method of the station service equipment-failure informing system which performance improves repair correspondence correctly that it is possible, and a station service equipment-failure informing system.

[0007]

[Means for Solving the Problem] A station service equipment-failure informing system of this invention comprises:

An antenna with which two or more above-mentioned base transceiver stations were provided in a station service equipment-failure informing system with which two or more radio personal digital assistants, two or more station service apparatus, and a base transceiver station perform radio, and notify a station service equipment failure in order to perform two or more above-mentioned radio personal digital assistants, two or more station service apparatus, and radio. The 1st reception means that receives failure information from the above-mentioned station service apparatus via these antennas.

The 1st specifying means that specifies an antenna which received failure information from the station service apparatus concerned when failure information from station service apparatus is received by this 1st reception means.

A transmitting means which transmits the station service equipment-failure generation information concerned to two or more above-mentioned radio personal digital assistants when failure information from station service apparatus is received by the 1st reception means of the above. The 2nd reception means that receives a response for which trouble-shooting correspondence from a radio personal digital assistant which received station service

equipment-failure generation information transmitted by this transmitting means is good, The 2nd specifying means that specifies an antenna which received a response for which trouble-shooting correspondence is good from each radio personal digital assistant received by this 2nd reception means, A communication means which notifies directions of trouble-shooting to a radio personal digital assistant received with the antenna when there were an antenna and a match which compared an antenna specified by the 1st specifying means of the above with an antenna specified by the 2nd specifying means of the above, and were specified by the 1st specifying means of the above.

[0008]A station service equipment-failure informing system of this invention comprises: Two or more antennas with which the above-mentioned base transceiver station was established in a prescribed position in a station service equipment-failure informing system with which two or more radio personal digital assistants, two or more station service apparatus, and a base transceiver station perform radio, and notify a station service equipment failure in order to perform two or more above-mentioned radio personal digital assistants, two or more station service apparatus, and radio.

The 1st reception means that receives failure information from the above-mentioned station service apparatus via these antennas.

The 1st specifying means that pinpoints a position of the station service apparatus concerned from received radio field intensity of two or more above-mentioned antennas when failure information from station service apparatus is received by this 1st reception means.

A transmitting means which transmits the station service equipment-failure generation information concerned to two or more above-mentioned radio personal digital assistants when failure information from station service apparatus is received by the 1st reception means of the above, The 2nd reception means that receives a response for which trouble-shooting correspondence from a radio personal digital assistant which received station service equipment-failure generation information transmitted by this transmitting means is good, The 2nd specifying means that pinpoints a position of each radio personal digital assistant from received radio field intensity of two or more above-mentioned antennas when a response for which trouble-shooting correspondence is good is received from each radio personal digital assistant by this 2nd reception means, A communication means which notifies directions of trouble-shooting to a radio personal digital assistant which compares a position of the station service apparatus concerned specified by the 1st specifying means of the above with a position of each radio personal digital assistant specified by the 2nd specifying means of the above, and is in a position nearest to a position of the station service apparatus concerned.

[0009]A notifying method of a station service equipment-failure informing system of this invention, Two or more radio personal digital assistants, two or more station service apparatus, and a base transceiver station are the notifying methods of a station service equipment-failure informing system which performs radio and notifies a station service equipment failure, When an antenna formed in order that the above-mentioned base transceiver station might perform two or more above-mentioned radio personal digital assistants, two or more station service apparatus, and radio receives failure information from the above-mentioned station service apparatus, [two or more] Specify an antenna which received failure information from the station service apparatus concerned, and the station service equipment-failure generation information concerned is transmitted to two or more above-mentioned radio personal digital assistants, A response for which trouble-shooting correspondence from a radio personal digital assistant which received this transmitted station service equipment-failure generation information is good is received, An antenna which received a response for which this received each trouble-shooting correspondence from a personal digital assistant of radio is good is specified, an antenna which received failure information from the station service apparatus concerned specified [above-mentioned], and an antenna which received a response for which trouble-shooting correspondence is good from a radio personal digital assistant of each above, [compare and] When there was a match, directions of trouble-shooting were notified to a radio personal digital

assistant received with the antenna.

[0010] A notifying method of a station service equipment-failure informing system of this invention. It is a notifying method of a station service equipment-failure informing system which a base transceiver station performs radio via a formed antenna, and reports station service equipment failures to be two or more radio personal digital assistants and two or more station service apparatus, the time of the above-mentioned base transceiver station receiving a notice of a station service equipment failure — a position of this station service apparatus — an account of the upper — from received radio field intensity of a formed antenna. [specify and] Notify two or more above-mentioned radio personal digital assistants that failure occurred to the station service apparatus concerned, and a response with good trouble-shooting from a radio personal digital assistant is received, a position of this received each personal digital assistant of radio — an account of the upper — directions of trouble-shooting were notified to a radio personal digital assistant which specifies from received radio field intensity of a formed antenna, and is in a position nearest to a position of station service apparatus specified [above-mentioned]

[0011] A station service equipment-failure informing system of this invention comprises: In a station service equipment-failure informing system with which two or more radio personal digital assistants, two or more station service apparatus, and a base transceiver station perform radio, and notify a station service equipment failure, A memory measure a priority of each radio personal digital assistant in two or more above-mentioned radio personal digital assistants in which the above-mentioned base transceiver station carries out repair correspondence at each station service equipment failure in two or more above-mentioned station service apparatus is beforehand remembered to be.

The 1st reception means that receives failure information from the above-mentioned station service apparatus.

A transmitting means which transmits the station service equipment-failure generation information concerned to two or more above-mentioned radio personal digital assistants when failure information from station service apparatus is received by this 1st reception means.

The 2nd reception means that receives a response for which repair correspondence from a radio personal digital assistant which received station service equipment-failure generation information transmitted by this transmitting means is good. A priority of a radio personal digital assistant which carries out repair correspondence is referred to to the station service equipment failure concerned in two or more station service apparatus memorized by the above-mentioned memory measure. A control means which performs control which notifies directions of trouble-shooting to a radio personal digital assistant with the highest priority which carries out repair correspondence from each radio personal digital assistant received by the 2nd reception means of the above.

[0012] A station service equipment-failure informing system of this invention comprises: In a station service equipment-failure informing system with which two or more radio personal digital assistants, two or more station service apparatus, and a base transceiver station perform radio, and notify a station service equipment failure, A memory measure a priority of each radio personal digital assistant in two or more above-mentioned radio personal digital assistants in which the above-mentioned base transceiver station carries out repair correspondence at each station service equipment failure in two or more above-mentioned station service apparatus is beforehand remembered to be.

A transmitting means which transmits the station service equipment-failure generation information concerned to two or more above-mentioned radio personal digital assistants when failure information is received from the above-mentioned station service apparatus.

When a response for which repair correspondence from a radio personal digital assistant which received station service equipment-failure generation information transmitted by this transmitting means is good is received, A control means which performs control which notifies directions of trouble-shooting to a radio personal digital assistant with the highest priority among each radio personal digital assistants received with reference to a priority of a radio personal

digital assistant which carries out repair correspondence to the station service equipment failure concerned in two or more station service apparatus memorized by the above-mentioned memory measure.

[0013]A notifying method of a station service equipment-failure informing system of this invention. Two or more radio personal digital assistants, two or more station service apparatus, and a base transceiver station are the notifying methods of a station service equipment-failure informing system which performs radio and notifies a station service equipment failure. The above-mentioned base transceiver station memorizes beforehand a priority of each radio personal digital assistant in two or more above-mentioned radio personal digital assistants which carry out repair correspondence to each station service equipment failure in two or more above-mentioned station service apparatus. When failure information is received from the above-mentioned station service apparatus, the station service equipment-failure generation information concerned is transmitted to two or more above-mentioned radio personal digital assistants. A response for which repair correspondence from a radio personal digital assistant which received this transmitted station service equipment-failure generation information is good is received. A priority of a radio personal digital assistant which carries out repair correspondence is referred to to the station service equipment failure concerned in two or more station service apparatus memorized [above-mentioned]. It was made to perform control which notifies directions of trouble-shooting to a radio personal digital assistant with the highest priority which carries out repair correspondence from each radio personal digital assistant which received a response for which the above-mentioned repair correspondence is good.

[0014]A notifying method of a station service equipment-failure informing system of this invention. Two or more radio personal digital assistants, two or more station service apparatus, and a base transceiver station are the notifying methods of a station service equipment-failure informing system which performs radio and notifies a station service equipment failure. The above-mentioned base transceiver station memorizes beforehand a priority of each radio personal digital assistant in two or more above-mentioned radio personal digital assistants which carry out repair correspondence to each station service equipment failure in two or more above-mentioned station service apparatus. When failure information is received from the above-mentioned station service apparatus, the station service equipment-failure generation information concerned is transmitted to two or more above-mentioned radio personal digital assistants. When a response for which repair correspondence from a radio personal digital assistant which received this transmitted station service equipment-failure generation information is good is received, a priority of a radio personal digital assistant which carries out repair correspondence is referred to to the station service equipment failure concerned in two or more station service apparatus memorized [above-mentioned]. It was made to perform control which notifies directions of trouble-shooting to a radio personal digital assistant with the highest priority among each received radio personal digital assistants.

[0015]A station service equipment-failure informing system of this invention comprises: Two or more antennas formed in a prescribed position in a station service equipment-failure informing system with which two or more radio personal digital assistants, station service apparatus, and base transceiver stations perform radio, and notify a station service equipment failure in order that the above-mentioned base transceiver station might perform a radio personal digital assistant and radio of the above-mentioned plurality.

The 1st reception means that receives failure information from the above-mentioned station service apparatus.

A transmitting means which transmits the station service equipment-failure generation information concerned to two or more above-mentioned radio personal digital assistants when failure information from station service apparatus is received by this 1st reception means.

The 2nd reception means that receives a response for which trouble-shooting correspondence from a radio personal digital assistant which received station service equipment-failure generation information transmitted by this transmitting means is good. A specifying means which pinpoints a position of each radio personal digital assistant from received radio field intensity of

two or more above-mentioned antennas when a response for which trouble-shooting correspondence is good is received from each radio personal digital assistant by this 2nd reception means. A communication means which notifies directions of trouble-shooting to a radio personal digital assistant which compares a position of each radio personal digital assistant specified by this specifying means, and is in a position nearest to a position of the station service apparatus concerned.

[0016] A station service equipment-failure informing system of this invention comprises:

In a station service equipment-failure informing system with which two or more radio personal digital assistants, station service apparatus, and base transceiver stations perform radio, and notify a station service equipment failure. A memory measure a priority of each radio personal digital assistant in two or more above-mentioned radio personal digital assistants in which the above-mentioned base transceiver station carries out repair correspondence at the above-mentioned station service equipment failure is beforehand remembered to be.

The 1st reception means that receives failure information from the above-mentioned station service apparatus.

A transmitting means which transmits the station service equipment-failure generation information concerned to two or more above-mentioned radio personal digital assistants one by one according to a priority memorized by the above-mentioned memory measure when failure information from station service apparatus is received by this 1st reception means.

The 2nd reception means that receives a response for which repair correspondence from a radio personal digital assistant which received station service equipment-failure generation information transmitted by this transmitting means is good, and a control means which performs control which notifies directions of trouble-shooting to the above-mentioned radio personal digital assistant based on reception by the 2nd reception means of the above.

[0017]

[Embodiment of the invention] Hereafter, the 1 embodiment of this invention is described with reference to drawings.

[0018] First, the 1st example is described.

[0019] Drawing 1 shows the outline composition of the station service equipment-failure informing system concerning the 1st example of this invention. That is, the station service equipment-failure informing system comprises the radio personal digital assistant 1 which each station employee carries, —, the base transceiver station 2 and two or more station service apparatus 3 currently installed in the station, —, the base station antenna 4.

[0020] Drawing 2 shows the outline composition of the radio personal digital assistant 1. The radio personal digital assistant 1 comprises the display (DSP) 11, the input device (KB) 12, the control device (CPU) 13, the communication apparatus (COM) 14, the nonvolatile storage (NVM) 15, and the buzzer (BUZ) 11a.

[0021] The display 11 displays information required for operation of this radio personal digital assistant 1, and the information sent from the base transceiver station 2 on a station employee. The input device 12 inputs the operator guidance to this radio portable apparatus 1 of a station employee, and the communication apparatus 14 manages control of the radio between the base transceiver stations 2. The nonvolatile storage 15 memorizes terminal ID of this radio personal digital assistant 1, the buzzer 11a controls each device of the above [the control device 13] by outputting an audible tone, and input and output of data, and an operation and comparison processing are performed.

[0022] Drawing 3 shows the outline composition of the base transceiver station 2. The base transceiver station 2 comprises the memory storage (MEM) 16, the control device (CPU: a specifying means, communication means) 17, and the communication apparatus (COM: a reception means, transmitting means) 18. Two or more base station antennas 4 and — which were mentioned above via the communication apparatus 18 are connected to the base transceiver station 2.

[0023] The memory storage 16 memorizes station service apparatus ID (identifier), the reason for

failure, and receiving antenna ID of the station service apparatus 3 which failure generated (identifier). The communication apparatus 18 manages control of the radio between radio personal digital assistant 1 and the station service apparatus 3, and the control device 17 controls each above device, and performs input and output of data, and an operation and comparison processing. The base station antenna 4 connected to the base transceiver station 2 via the communication apparatus 18 transmits and receives the electric wave of radio.

[0024] Drawing 4 shows the example of composition of the memory storage 16 of the base transceiver station 2. Station service apparatus ID38, reason 39 for failure, and receiving antenna ID40 is constituted as one set by the memory storage 16, and is stored in it. In drawing 4, receiving antenna ID40 whose station service apparatus ID38 is "#M2" and whose reasons 39 for failure are a "powerfail" and ID of the base station antenna 4 which received is stored as "#A1."

[0025] Drawing 5 shows the outline composition of the station service apparatus 3. The station service apparatus 3 comprises the communication apparatus (COM) 27, the nonvolatile storage (NVM) 28, the control device (CPU) 29, and magnetic card reader 30 grade.

[0026] The communication apparatus 27 manages control of the radio between the base transceiver stations 2, and the nonvolatile storage 28 memorizes apparatus ID (identifier) of this apparatus, and the control device 29 controls each above device containing the station service apparatus 3 of a standard configuration, and performs input and output of data, and an operation and comparison processing.

[0027] By the way, the base station antenna 4 used in the station service equipment-failure informing system concerning the 1st example in the railroad station institution in which the station service apparatus 3 is installed, Since the propagation conditions of an electric wave --- the shape of railway station installation includes a long and slender thing, and an underground center and the institution in a building centering on a plat form --- are bad, two or more sets are installed for every small area of railway station installation. In the station service equipment-failure informing system, in order to guarantee communicative continuity to movement between area, the base transceiver station 2 always grasps the position (in which area (under the = base station antenna 4) is it?) of the radio personal digital assistant 1 and ---.

[0028] In this example, identify the position of the radio personal digital assistant 1, ---, the broken station service apparatus 3 using the mechanism mentioned above (grasp), the station employee who is in a near place is made to do correspondence of trouble-shooting, and the waiting time of trouble-shooting is shortened.

[0029] Next, in such composition, operation of the station service equipment-failure informing system concerning the 1st example is explained with reference to the flow chart of drawing 6 - drawing 8.

[0030] First, suppose that failure occurred to the station service apparatus 3 currently installed and the one station service apparatus (for example, station service apparatus ID#M2) 3 of --- in drawing 6. [two or more]

[0031] The control device 29 of the station service apparatus 3 concerned reads station service apparatus ID (#M2) by which setting storing is beforehand carried out to the nonvolatile storage 28, and transmits to the base transceiver station 2 from the communication apparatus 27 with the reason for a station service equipment failure (ST02). (failure information) And if waiting (ST03) and repair complete that a station employee comes and repair is completed, it will return to step ST01 (ST04).

[0032] When the base transceiver station 2 has failure information from waiting (ST06) and the above-mentioned station service apparatus 3 (ST07), on the other hand, the failure information from the station service apparatus 3 the control device 17 of the base transceiver station 2. Station service apparatus ID (#M2) which received with the communication apparatus 18, and the reason for failure are stored in station service apparatus ID38 which is the composition of the memory storage 16, and the reason 39 for failure (ST08). Furthermore, the control device 17 stores ID (for example, #A1) of the base station antenna 4 which received the failure information from the above-mentioned station service apparatus 3 in receiving antenna ID40 which is the composition of the memory storage 16 (ST10). Then, the control device 17 carries out

simultaneous multiple address transmission of the failure information of the station service apparatus (#M2) 3 from the communication apparatus 18 to all the radio personal digital assistants 1 (ST10).

[0033] And when each radio personal digital assistant 1 receives failure information from the failure waiting state (ST12) from the base transceiver station 2 (ST13), it shifts to the next operation.

[0034] In drawing 7, the control device 13 of the radio personal digital assistant 1 displays the failure content of the station service apparatus (#M2) 3 received with the communication apparatus 14 on the display 11, as shown in drawing 9, and the keystroke from the input device 12 is directed to the station employee who sounds and possesses the buzzer 11a (ST18). The display example at the time of [this] displaying on the display 11 shown in drawing 9 "failure occurred in #M2. Those who can carry out repair correspondence need to press one of keys immediately. I notify again those who ask you for correspondence. It is considered as ".

[0035] The control device 13 of the radio personal digital assistant 1 the keystroke from the input device 12 The waiting for 15 second (ST19). If it shifts to step ST23 and there is a keystroke within 15 seconds when 15 seconds pass (STs 20 and 21), ID (for example, #T1) of the radio personal digital assistant 1 concerned beforehand set as the nonvolatile storage 15 is read, and it transmits to the base transceiver station 2 from the communication apparatus 14 (ST22), and after that, the display of the display 11 is erased and the sound of the buzzer 11a is stopped (ST23).

[0036] After carrying out simultaneous multiple address transmission of the control device 17 of the base transceiver station 2 by step ST10, When waiting (ST14) and a response are not about the radio personal digital assistant 1 and the response from — for 20 seconds and 20 seconds pass, it returns to step ST10 (ST15). When a response input occurs (ST16), ID of the base station antenna 4 which received about each of the radio personal digital assistant 1 which received from the communication apparatus 18 is specified. (For example, as for radio personal digital assistant #T1, base station antenna #A1 and radio personal digital assistant #T3 are like base station antenna #A2) It compares with ID (for example, #A1) of the base station antenna 4 which received the failure information from the station service apparatus (#M2) 3 stored in the memory storage 18 (ST17).

[0037] In drawing 8, the control device 17 of the base transceiver station 2, If a match does not have a comparison result, it will return to step ST10 (ST24). If there is a match (ST24), from the communication apparatus 18, the reason 39 for failure (for example, powerfail) stored in the memory storage 16 will be read to the radio personal digital assistant (in the case of this example #T1) 3 which was in agreement with ID of the base station antenna 4 and which was carried out (for example, #A1), and it will transmit to it (ST25).

[0038] The radio personal digital assistant (#T1) 3 the notice of the reason for failure from the station service apparatus 3 Waiting (ST26). When the notice of the reason for failure of the station service apparatus (#M2) 3 is received (ST27), the control device 13 of the radio personal digital assistant (#T1) 3 displays the reason for failure (powerfail) received with the communication apparatus 14 on the display 11, as shown in drawing 10, and sounds the buzzer 11a (ST28). The display example at the time of [this] displaying on the display 11 shown in drawing 10 "please give me repair correspondence. Failed apparatus: Once it presses #M2, the reason: powerfail for failure, and a key, a buzzer will stop. If it pushes once again, a display will disappear. It is considered as ".

[0039] The control device 13 of the radio personal digital assistant (#T1) 3, If there are waiting (ST29) and an input about the keystroke from the input device 12 by the station employee who possesses the radio personal digital assistant (#T1) 3 concerned, the sound of the buzzer 11a will be stopped (ST30), and if there is a keystroke once again, the display of the display 11 will be erased (STs 31 and 32), and it will return to step ST11.

[0040] It identifies respectively with the base station antenna which received the position of the station employee (radio personal digital assistant) who offered the installed position of broken station service apparatus, and repair correspondence according to the 1st example of the above as explained above (specific in the received base station antenna). A prompt repair action is

enabled by directing repair correspondence to the radio personal digital assistant (station employee) which received the response from the base station antenna which received the communication from broken station service apparatus, and a base station antenna in agreement. [0041]Next, the 2nd example is described.

[0042]Drawing 11 shows the outline composition of the station service equipment-failure informing system concerning the 2nd example of this invention. That is, the station service equipment-failure informing system comprises the radio personal digital assistant 6 which each station employee carries, ---, the base transceiver station 7, the base station antenna 10 and two or more station service apparatus 8 currently installed in the station, and ---. Since the composition of the radio personal digital assistant 6 is the same as that of the radio personal digital assistant 1 of the 1st example shown in drawing 2, explanation is omitted.

[0043]Drawing 12 shows the outline composition of the base transceiver station 7, the communication apparatus (COM: --- a reception means) to which, as for the base transceiver station 7, the memory storage (MEM) 20, the control device (CPU: control means) 21, and the base station antenna 10 are connected. It comprises the transmitting means 22, the nonvolatile storage (HD: memory measure) 24, the display (DSP) 25, and the input device (KB) 26.

[0044]The memory storage 20 memorizes station service apparatus ID (identifier) and the reason for failure of the station service apparatus 8 which failure generated. The communication apparatus 22 manages control of the radio between radio personal digital assistant 6 and the station service apparatus 8. The nonvolatile storage 24 memorizes the priority list corresponding to trouble-shooting mentioned later, and the display 25 displays information required for operation of this base transceiver station 7, the input device 26 controls each device of the above [the control device 21] by inputting the operator guidance to this base transceiver station 7, and it performs input and output of data, and an operation and comparison processing. The base station antenna 10 connected to the base transceiver station 7 via the communication apparatus 18 transmits and receives the electric wave of radio.

[0045]Drawing 13 shows the example of composition of the memory storage 20 of the base transceiver station 7. Station service apparatus ID41 and the reason 42 for failure are constituted from one set by the memory storage 20, and are stored in it. In drawing 13, "#M2" and the reason 42 for failure are stored for station service apparatus ID41 as a "powerfail."

[0046]Drawing 14 shows the example of storing of the priority list corresponding to trouble-shooting stored in the nonvolatile storage 24. The priority list corresponding to trouble-shooting of the nonvolatile storage 24 comprises station service apparatus ID30, correspondence station employee ID31, possession terminal ID32, and the correspondence priority 33.

[0047]For example, when station service apparatus ID30 is "#M1", correspondence station employee ID31 is "#P1", possession terminal ID32 is "#T1", and the correspondence priority 33 is the 1st place. When station service apparatus ID30 is "#M2", correspondence station employee ID31 by "#P1." Possession terminal ID32 is "#T1", the correspondence priority 33 is the 2nd place, when station service apparatus ID30 is otherwise "#M2", possession terminal ID32 is "#T2" in "#P2", and some whose correspondence priority 33 is the 1st place have correspondence station employee ID31.

[0048]Next, in such composition, operation of the station service equipment-failure informing system concerning the 2nd example is explained with reference to the flow chart of drawing 15 - drawing 17.

[0049]First, suppose that failure occurred to the station service apparatus 8 currently installed and the one station service apparatus (for example, station service apparatus ID#M2) 8 of --- in drawing 15. [two or more]

[0050]The control device 29 of the station service apparatus 8 concerned reads station service apparatus ID (#M2) by which setting storing is beforehand carried out to the nonvolatile storage 28, and transmits to the base transceiver station 7 from the communication apparatus 27 with the reason for a station service equipment failure (ST34). (failure information) And if waiting (ST35) and repair complete that a station employee comes and repair is completed, it will return to step ST33 (ST36).

[0051]When the base transceiver station 7 has failure information from waiting (ST38) and the

above-mentioned station service apparatus 8 (ST39), on the other hand, the failure information from the station service apparatus 8 the control device 21 of the base transceiver station 7, Station service apparatus ID (#M2) which received with the communication apparatus 22, and the reason for failure are stored in station service apparatus ID41 which is the composition of the memory storage 20, and the reason 42 for failure (ST40).

[0052]Then, the control device 21 searches station service apparatus ID (#M2) and the match which received to station service apparatus ID30 under priority list corresponding to trouble-shooting shown by drawing 14, stored in the nonvolatile storage 24, is found out to it, and reads corresponding possession terminal ID32 to it (ST41). In drawing 14, possession terminal ID corresponding to station service apparatus ID (#M2) which received is "#T1" and "#T2."

[0053]The control device 21 transmits the failure information of the station service apparatus (#M2) 8 to above-mentioned possession terminal ID (#T1) and the radio personal digital assistants 6 and 6 of (#T2) from the communication apparatus 22 (ST42).

[0054]When the radio personal digital assistant (#T1) 6 and the radio personal digital assistant (#T2) 6 receive failure information from the failure waiting state (ST44) from the base transceiver station 7 (ST45), they shift to the next operation.

[0055]In drawing 16, each control device 13 of the radio personal digital assistant (#T1) 6 and the radio personal digital assistant (#T2) 6, The failure content of the station service apparatus (#M2) 8 received with the communication apparatus 14 is displayed on the display 11, as drawing 9 showed, and the keystroke from the input device 12 is directed to the station employee who sounds and possesses the buzzer 11a (ST50).

[0056]The control device 13 of each above the keystroke from the input device 12 The waiting for 15 second (ST51). If it shifts to step ST55 and there is a keystroke within 15 seconds when 15 seconds pass (STs 52 and 53), ID (respectively #T1, #T2) of the radio personal digital assistant 1 concerned beforehand set as the nonvolatile storage 15 is read, and it transmits to the base transceiver station 7 from the communication apparatus 14 (ST54), and after that, the display of the display 11 is erased and the sound of the buzzer 11a is stopped (ST55).

[0057]After the control device 21 of the base transceiver station 7 carries out failure transmission by step ST42. When waiting (ST46) and a response are not about the response from the radio personal digital assistants 6 and 6 for 20 seconds and 20 seconds pass, it returns to step ST42 (ST47). When a response input occurs (ST48), about each of the radio personal digital assistants (#T1, #T2) 6 and 6 which received with the communication apparatus 22. The correspondence priority about broken station service apparatus ID (#M2) is read from the correspondence priority 33 shown by drawing 14 stored in the nonvolatile storage 24 (#T1 is the 2nd place and #T2 is the 1st place), and ranking is compared (ST47).

[0058]In drawing 17, the control device 21 of the base transceiver station 7, Consider the high radio personal digital assistant 6 of a priority as repair correspondence, and, in the case of the same ranking, the thing on under list of correspondence priorities 33 shown in drawing 12 is chosen (ST56). From the communication apparatus 22, the reason 39 for failure (powerfail) stored in the memory storage 20 is read to the high radio personal digital assistant (#T2) 6 of a priority, and it transmits to it (ST57).

[0059]The radio personal digital assistant (#T2) 6 the notice of the reason for failure from the base transceiver station 7 Waiting (ST58). When the notice of the reason for failure of the station service apparatus (#M2) 8 is received (ST59), the control device 13 of the radio personal digital assistant (#T2) 6 displays the reason for failure (powerfail) received with the communication apparatus 14 on the display 11, as shown in drawing 10, and sounds the buzzer 11a (ST60).

[0060]The control device 13 of the radio personal digital assistant (#T2) 6, If there are waiting (ST61) and an input about the keystroke from the input device 12 by the station employee who possesses the radio personal digital assistant (#T2) 6 concerned, the sound of the buzzer 11a will be stopped (ST62), and if there is a keystroke once again, the display of the display 11 will be erased (STs 63 and 64), and it will return to step ST43.

[0061]Next, the operation which registers the repair corresponding candidate person for every station service apparatus 8 is explained with reference to the flow chart of drawing 18.

[0062]The control device 21 of the base transceiver station 7 displays the screen shown in drawing 19 on the display 25, points to the input of station service apparatus ID34, correspondence station employee ID35, possession terminal ID36, and the correspondence priority 37 to an operator (ST66), and waits for the input from the input device 26 to it (ST67).

[0063]When the control device 21 is inputted (ST68), to [station service apparatus ID30, correspondence station employee ID31, possession terminal ID32, and the correspondence priority 33] in the priority list corresponding to trouble-shooting shown in drawing 14 stored in the nonvolatile storage 24. It is searched whether the same data as [station service apparatus ID34, correspondence station employee ID35, possession terminal ID36, and the correspondence priority 37] which were inputted is registered (ST69).

[0064]If the control device 21 is registered (ST70), [Station service apparatus ID30, correspondence station employee ID31, possession terminal ID32, and the correspondence priority 33] under priority list corresponding to trouble-shooting the correspondence priority 33 of the data which is in agreement with [station service apparatus ID34, correspondence station employee ID35, possession terminal ID36, and the correspondence priority 37]. It rewrites to the correspondence priority 37 which the operator inputted (ST71).

[0065]If the control device 21 is not registered (ST70), [station service apparatus ID34, correspondence station employee ID35, possession terminal ID36, and the correspondence priority 37] which the operator inputted into the priority list corresponding to trouble-shooting will be added (ST71).

[0066]Performance improves repair correspondence correctly that it is possible by requesting repair correspondence only from the station employee who registers after carrying out priority attachment of the station employee who is well versed in repair of the apparatus concerned for every station service apparatus beforehand according to the degree of repair special occupation, or skill level according to the 2nd example of the above, as explained above, and was registered.

[0067]It is also possible to combine and use the 1st example and the 2nd example which were mentioned above.

[0068]it explained above — as — the above — according to the embodiment of the invention, on the occasion of the proposal of the repair correspondence from [from the 1st example and the 2nd example] two or more station employees, performance improves repair correspondence correctly that it is possible with a prompt repair action by choosing a correspondence station employee based on a priority.

[0069]

[Effect of the Invention]According to this invention, as explained in full detail above, when failure occurs to station service apparatus, it is quick and the notifying method of the station service equipment-failure informing system which performance improves repair correspondence correctly that it is possible, and a station service equipment-failure informing system can be provided.

[Translation done.]

* NOTICES *

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1.This document has been translated by computer. So the translation may not reflect the original precisely.

2.**** shows the word which can not be translated.

3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] The block diagram showing the outline composition of the station service equipment-failure informing system concerning the 1st example of this invention.

[Drawing 2] The figure showing the outline composition of a radio personal digital assistant.

[Drawing 3] The figure showing the outline composition of a base transceiver station.

[Drawing 4] The figure showing the example of composition of the memory storage of a base transceiver station.

[Drawing 5] The figure showing the outline composition of station service apparatus.

[Drawing 6] The flow chart for explaining operation of the station service equipment-failure informing system concerning the 1st example.

[Drawing 7] The flow chart for explaining operation of the station service equipment-failure informing system concerning the 1st example.

[Drawing 8] The flow chart for explaining operation of the station service equipment-failure informing system concerning the 1st example.

[Drawing 9] The figure showing the display example displayed on the display.

[Drawing 10] The figure showing the display example displayed on the display.

[Drawing 11] The block diagram showing the outline composition of the station service equipment-failure informing system concerning the 2nd example of this invention.

[Drawing 12] The figure showing the outline composition of a base transceiver station.

[Drawing 13] The figure showing the example of composition of the memory storage of a base transceiver station.

[Drawing 14] The figure showing the example of storing of the priority list corresponding to trouble-shooting stored in a nonvolatile storage.

[Drawing 15] The flow chart for explaining operation of the station service equipment-failure informing system concerning the 2nd example.

[Drawing 16] The flow chart for explaining operation of the station service equipment-failure informing system concerning the 2nd example.

[Drawing 17] The flow chart for explaining operation of the station service equipment-failure informing system concerning the 2nd example.

[Drawing 18] The flow chart for explaining the operation which registers the repair corresponding candidate person for every station service apparatus.

[Drawing 19] The figure showing the display example displayed on the display.

[Description of Notations]

1, 6 — Radio personal digital assistant

2, 7 — Base transceiver station

3, 8 — Station service apparatus

4, 10 — Base station antenna

11, 25 — Display

12, 26 — Input device

13, 17, 21, 29 — Control device

14, 18, 22 — Communication apparatus

15, 24 — Nonvolatile storage

16, 20 — Memory storage

[Translation done.]

* NOTICES *

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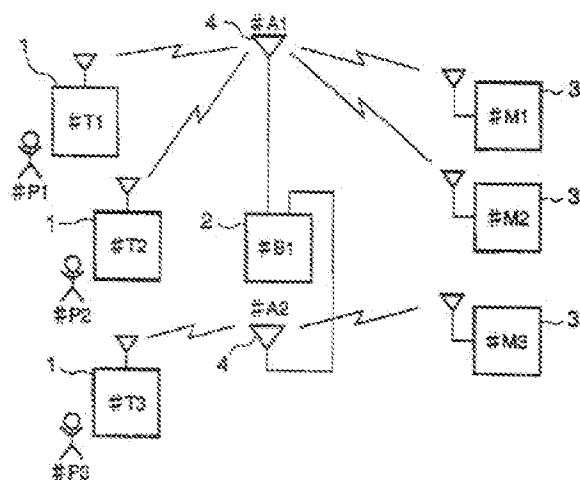
precisely.

2.*** shows the word which can not be translated.

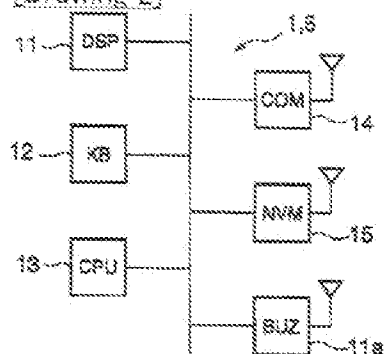
3.In the drawings, any words are not translated.

DRAWINGS

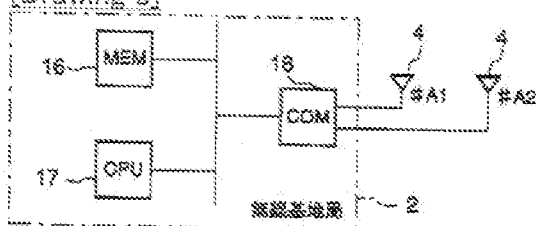
[Drawing 1]



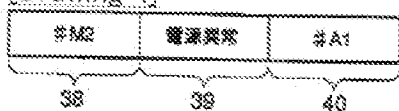
[Drawing 2]



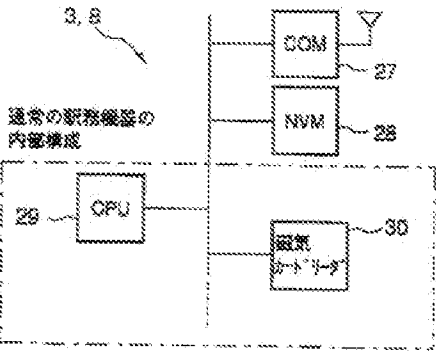
[Drawing 3]



[Drawing 4]



[Drawing 5]



[Drawing 9]

11

#M2で故障が発生しました。

修理対応できる方は、いずれかのキーをすぐに押して下さい。

対応をお願いする方には、再度通知いたします。

[Drawing 10]

11

修理対応をお願いします。

故障機器 : #M2

故障理由 : 電源異常

キーを一度押すとブザーが止まります。

もう一度押すと表示が消えます。

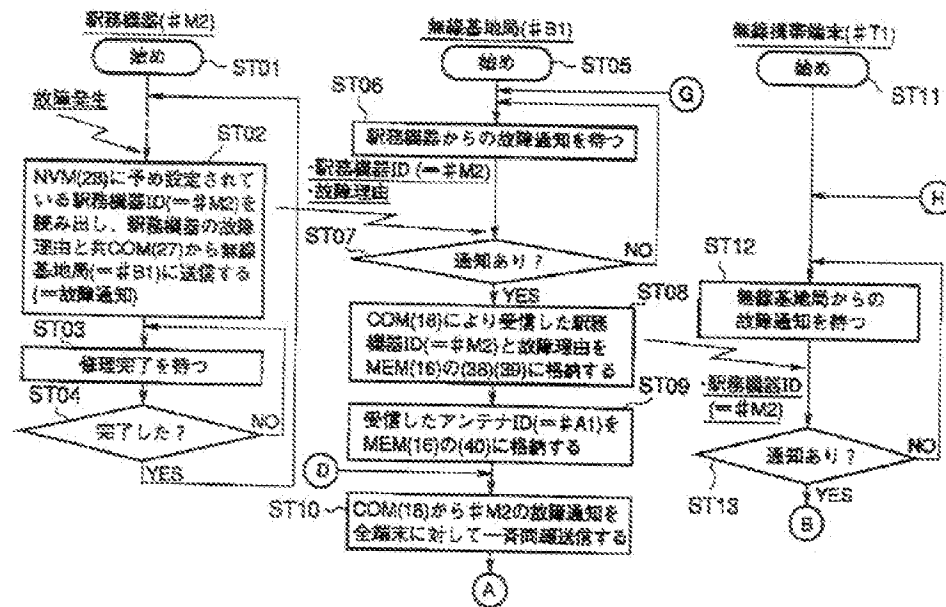
[Drawing 13]

#M2	電源異常
41	42

[Drawing 14]

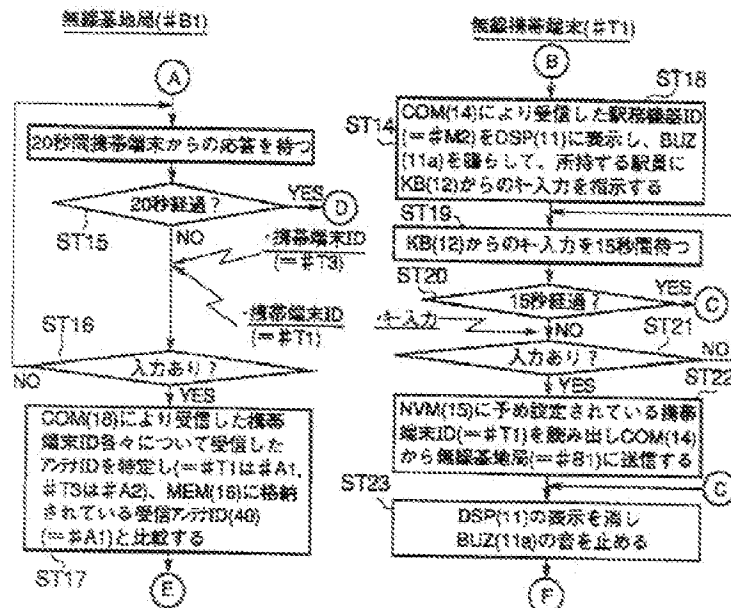
駅務機器ID	対応駅員ID	所持端末ID	対応優先順位
#M1	#P1	#T1	1
#M1	#P3	#T3	2
#M2	#P1	#T1	2
#M2	#P2	#T2	1
#M3	#P1	#T1	1
#M3	#P3	#T3	2
30	31	32	33

[Drawing 6]



[Drawing 7]

駅務機器(#M2)



[Drawing 19]

下記の各項目を入力して下さい。

駅務機器ID : #M2

対応駅員ID : #P2

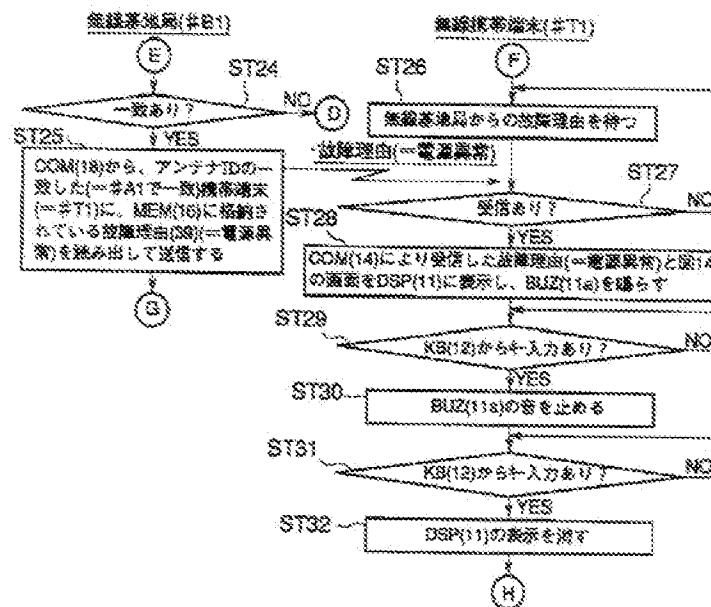
所持端末ID : #T3

対応優先順位 : 2

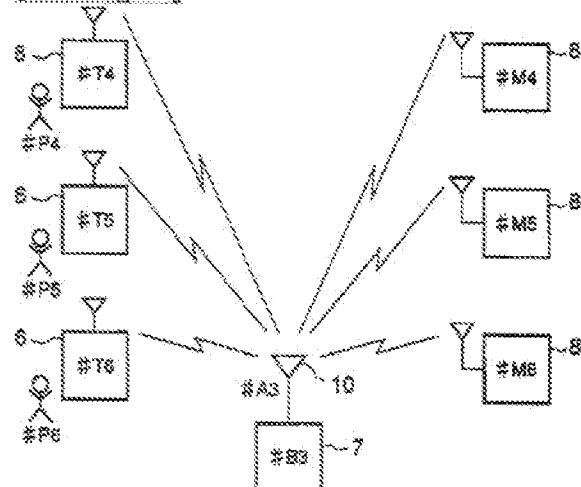
入力は終了しましたか? Y

[Drawing 8]

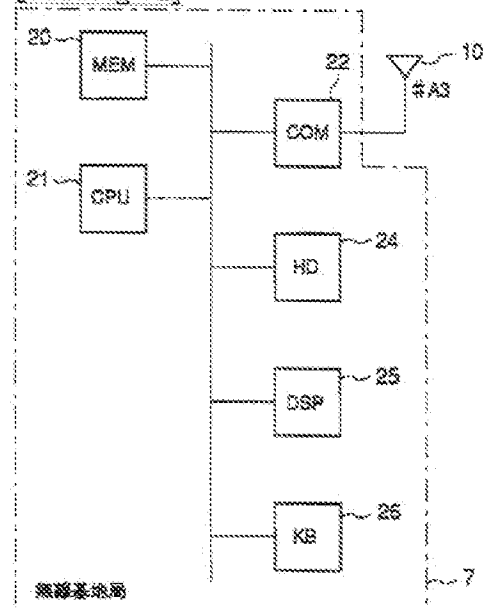
図10 (無線基地局 (#B1))



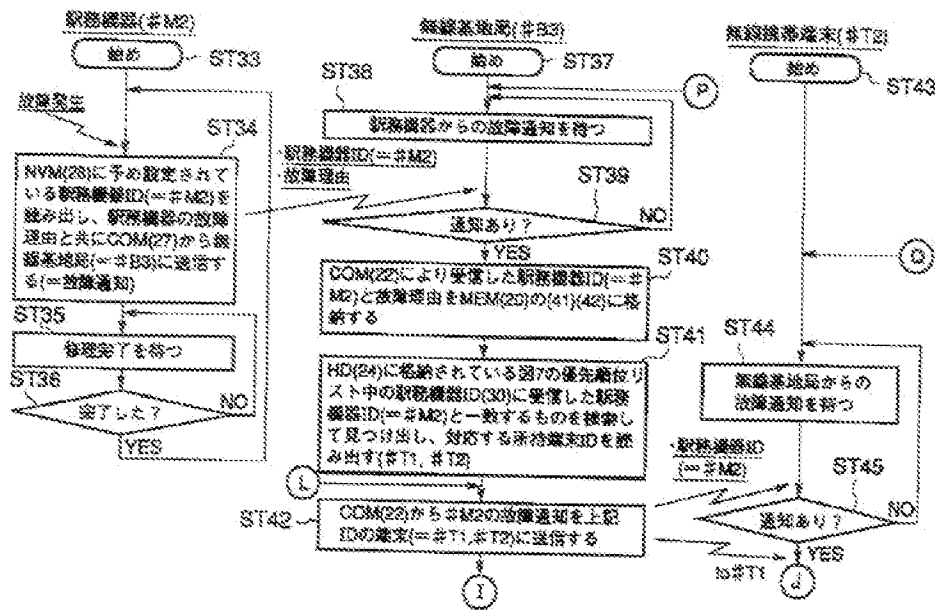
[Drawing 11]



[Drawing 12]

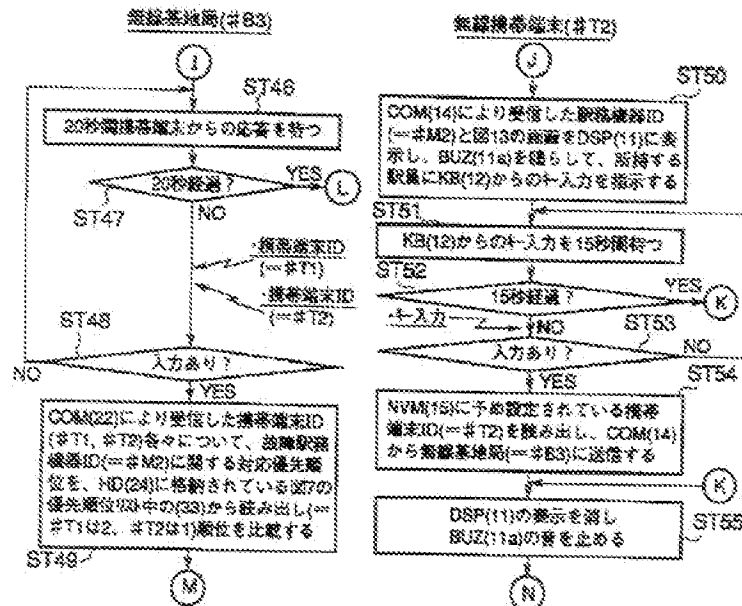


[Drawing 15]



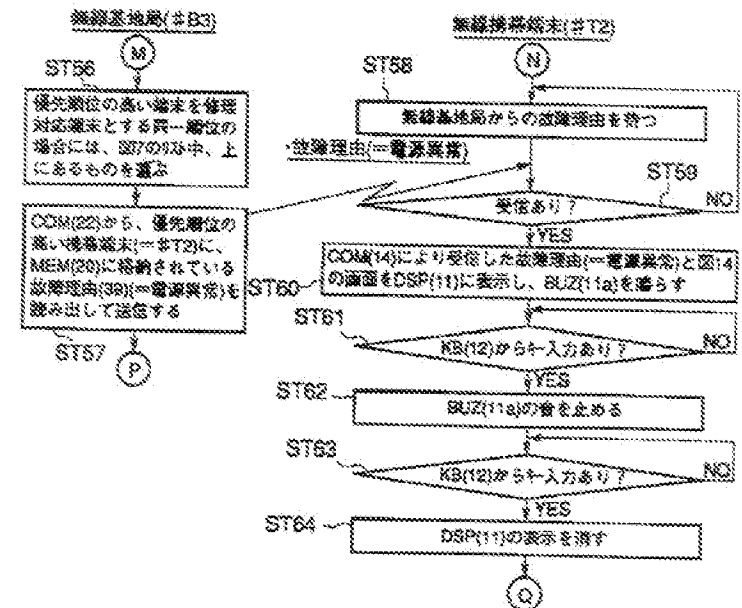
[Drawing 16]

無線機器(#M2)

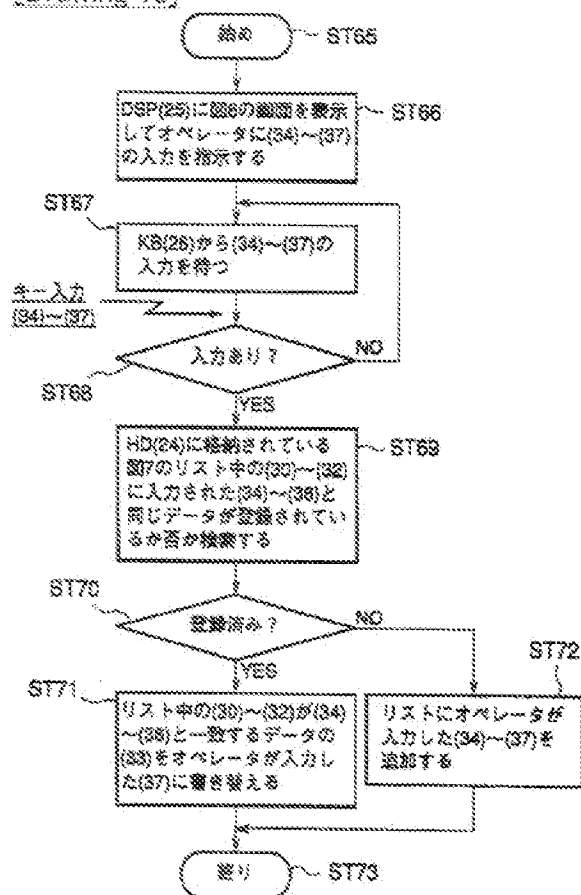


[Drawing 17]

無線機器(#M2)



[Drawing 18]



[Translation done.]

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株式会社東芝

神奈川県川崎市幸区堀川町72番地

(72) 発明者 清水 眞

神奈川県川崎市幸区柳町70番地 株式会社
東芝柳町工場内

(74) 代理人 100058479

井理士 鈴江 武彦 (外6名)

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5K067 AA41 B821 D017 D023 D024

EE02 EE10 FF02 FF18 FF23

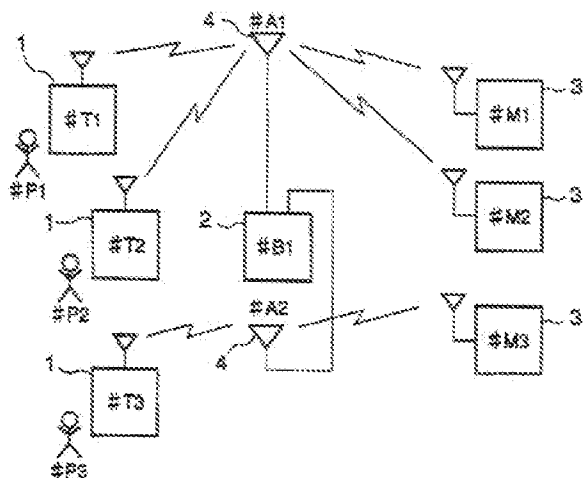
HH22 HH23 JJ53 JJ54

(54) 【発明の名称】 駅務機器故障通報システムと駅務機器故障通報システムの通報方法

(57) 【要約】

【課題】 駅務機器に故障が発生した際に迅速で正確かつ手際よく修理対応を可能とする。

【解決手段】 駅務機器3が設置される鉄道駅施設で使用する基地局アンテナ4が、駅施設の形状がプラットフォームを中心に細長いこと及び地下施設やビル内施設を含む等電波の伝播条件が悪いことから、駅施設の小さなエリア毎に複数台が設置されていて、このエリア間の移動に対して通信の連続性を保証するため無線基地局2は、常に無線携帯端末1、…の位置(どのエリア(=基地局アンテナ4の下)に居るか)を把握し、無線携帯端末1、…、及び故障した駅務機器3の位置を同定(把握)し、近い場所に居る無線携帯端末1を携帯している駅員に故障修理の対応をさせる。



【特許請求の範囲】

【請求項1】 複数の無線携帯端末と複数の駅務機器と無線基地局とが無線通信を行って駅務機器の故障を通報する駅務機器故障通報システムにおいて、

上記無線基地局が、

上記複数の無線携帯端末と複数の駅務機器と無線通信を行うために複数設けられたアンテナと、

これらのアンテナを介して上記駅務機器から故障通知を受信する第1の受信手段と、

この第1の受信手段で駅務機器からの故障通知を受信した際、当該駅務機器からの故障通知を受信したアンテナを特定する第1の特定手段と、

上記第1の受信手段で駅務機器からの故障通知を受信した際、当該駅務機器の故障発生通知を上記複数の無線携帯端末に送信する送信手段と、

この送信手段で送信された駅務機器の故障発生通知を受信した無線携帯端末からの故障修理対応可の応答を受信する第2の受信手段と、

この第2の受信手段で受信された各々の無線携帯端末から故障修理対応可の応答を受信したアンテナを特定する第2の特定手段と、

上記第1の特定手段で特定されたアンテナと上記第2の特定手段で特定されたアンテナとを比較し、上記第1の特定手段で特定されたアンテナと一致するものがあればそのアンテナで受信した無線携帯端末に対して故障修理の指示を通報する通報手段と、

を具備したことを特徴とする駅務機器故障通報システム。

【請求項2】 複数の無線携帯端末と複数の駅務機器と無線基地局とが無線通信を行って駅務機器の故障を通報する駅務機器故障通報システムにおいて、

上記無線基地局が、

上記複数の無線携帯端末と複数の駅務機器と無線通信を行うために所定位置に設けられた複数のアンテナと、

これらのアンテナを介して上記駅務機器から故障通知を受信する第1の受信手段と、

この第1の受信手段で駅務機器からの故障通知を受信した際、上記複数のアンテナの受信電波強度から当該駅務機器の位置を特定する第1の特定手段と、

上記第1の受信手段で駅務機器からの故障通知を受信した際、当該駅務機器の故障発生通知を上記複数の無線携帯端末に送信する送信手段と、

この送信手段で送信された駅務機器の故障発生通知を受信した無線携帯端末からの故障修理対応可の応答を受信する第2の受信手段と、

この第2の受信手段で各々の無線携帯端末から故障修理対応可の応答を受信した際、上記複数のアンテナの受信電波強度から各々の無線携帯端末の位置を特定する第2の特定手段と、

上記第1の特定手段で特定された当該駅務機器の位置と

上記第2の特定手段で特定された各々の無線携帯端末の位置とを比較し、当該駅務機器の位置に最も近い位置にある無線携帯端末に対して故障修理の指示を通報する通報手段と、

を具備したことを特徴とする駅務機器故障通報システム。

【請求項3】 複数の無線携帯端末と複数の駅務機器と無線基地局とが無線通信を行って駅務機器の故障を通報する駅務機器故障通報システムの通報方法であって、

上記無線基地局が、上記複数の無線携帯端末と複数の駅務機器と無線通信を行うために複数設けられたアンテナで上記駅務機器から故障通知を受信した際、当該駅務機器からの故障通知を受信したアンテナを特定すると共に当該駅務機器の故障発生通知を上記複数の無線携帯端末に送信し、この送信された駅務機器の故障発生通知を受信した無線携帯端末からの故障修理対応可の応答を受信し、この受信した各々の無線携帯端末から故障修理対応可の応答を受信したアンテナを特定し、上記特定された当該駅務機器からの故障通知を受信したアンテナと上記各々の無線携帯端末から故障修理対応可の応答を受信したアンテナとを比較し、一致するものがあればそのアンテナで受信した無線携帯端末に対して故障修理の指示を通報するようにしたことを特徴とする駅務機器故障通報システムの通報方法。

【請求項4】 複数の無線携帯端末と複数の駅務機器と、複数設けられたアンテナを介して無線基地局とが無線通信を行って駅務機器の故障を通報する駅務機器故障通報システムの通報方法であって、

上記無線基地局が、駅務機器の故障通知を受信した際、この駅務機器の位置を上記複数設けられたアンテナの受信電波強度から特定し、当該駅務機器に故障が発生したことを上記複数の無線携帯端末に通知して無線携帯端末からの故障修理可の応答を受信し、この受信した各々の無線携帯端末の位置を上記複数設けられたアンテナの受信電波強度から特定し、上記特定された駅務機器の位置に最も近い位置にある無線携帯端末に故障修理の指示を通知するようにしたことを特徴とする駅務機器故障通報システムの通報方法。

【請求項5】 複数の無線携帯端末と複数の駅務機器と無線基地局とが無線通信を行って駅務機器の故障を通報する駅務機器故障通報システムにおいて、

上記無線基地局が、

上記複数の駅務機器における個々の駅務機器の故障に修理対応する上記複数の無線携帯端末における個々の無線携帯端末の優先順位が予め記憶されている記憶手段と、上記駅務機器から故障通知を受信する第1の受信手段と、

この第1の受信手段で駅務機器からの故障通知を受信した際、当該駅務機器の故障発生通知を上記複数の無線携帯端末に送信する送信手段と、

この送信手段で送信された駅務機器の故障発生通知を受信した無線携帯端末からの修理対応可の応答を受信する第2の受信手段と、

上記記憶手段に記憶されている複数の駅務機器における当該駅務機器の故障に修理対応する無線携帯端末の優先順位を参照して、上記第2の受信手段で受信した各々の無線携帯端末から修理対応する最も優先順位の高い無線携帯端末に故障修理の指示を通報する制御を行う制御手段と、

を具備したことを特徴とする駅務機器故障通報システム。

【請求項6】 複数の無線携帯端末と複数の駅務機器と無線基地局とが無線通信を行って駅務機器の故障を通報する駅務機器故障通報システムにおいて、

上記無線基地局が、

上記複数の駅務機器における個々の駅務機器の故障に修理対応する上記複数の無線携帯端末における個々の無線携帯端末の優先順位が予め記憶されている記憶手段と、
上記駅務機器から故障通知を受信した際、当該駅務機器の故障発生通知を上記複数の無線携帯端末に送信する送信手段と、

この送信手段で送信された駅務機器の故障発生通知を受信した無線携帯端末からの修理対応可の応答を受信した際、上記記憶手段に記憶されている複数の駅務機器における当該駅務機器の故障に修理対応する無線携帯端末の優先順位を参照して、受信した各々の無線携帯端末のうち最も優先順位の高い無線携帯端末に故障修理の指示を通報する制御を行う制御手段と、

を具備したことを特徴とする駅務機器故障通報システム。

【請求項7】 複数の無線携帯端末と複数の駅務機器と無線基地局とが無線通信を行って駅務機器の故障を通報する駅務機器故障通報システムの通報方法であって、

上記無線基地局が、上記複数の駅務機器における個々の駅務機器の故障に修理対応する上記複数の無線携帯端末における個々の無線携帯端末の優先順位を予め記憶し、
上記駅務機器から故障通知を受信した際、当該駅務機器の故障発生通知を上記複数の無線携帯端末に送信し、この送信された駅務機器の故障発生通知を受信した無線携帯端末からの修理対応可の応答を受信し、上記記憶されている複数の駅務機器における当該駅務機器の故障に修理対応する無線携帯端末の優先順位を参照して上記修理対応可の応答を受信した各々の無線携帯端末から修理対応する最も優先順位の高い無線携帯端末に故障修理の指示を通報する制御を行うようにしたことを特徴とする駅務機器故障通報システムの通報方法。

【請求項8】 複数の無線携帯端末と複数の駅務機器と無線基地局とが無線通信を行って駅務機器の故障を通報する駅務機器故障通報システムの通報方法であって、

上記無線基地局が上記複数の駅務機器における個々の駅

務機器の故障に修理対応する上記複数の無線携帯端末における個々の無線携帯端末の優先順位を予め記憶し、上記駅務機器から故障通知を受信した際、当該駅務機器の故障発生通知を上記複数の無線携帯端末に送信し、この送信された駅務機器の故障発生通知を受信した無線携帯端末からの修理対応可の応答を受信した際、上記記憶されている複数の駅務機器における当該駅務機器の故障に修理対応する無線携帯端末の優先順位を参照して、受信した各々の無線携帯端末のうち最も優先順位の高い無線携帯端末に故障修理の指示を通報する制御を行うようにしたことを特徴とする駅務機器故障通報システムの通報方法。

【請求項9】 複数の無線携帯端末と駅務機器と無線基地局とが無線通信を行って駅務機器の故障を通報する駅務機器故障通報システムにおいて、

上記無線基地局が、

上記複数の無線携帯端末と無線通信を行うために所定位置に設けられた複数のアンテナと、

上記駅務機器から故障通知を受信する第1の受信手段と、

この第1の受信手段で駅務機器からの故障通知を受信した際、当該駅務機器の故障発生通知を上記複数の無線携帯端末に送信する送信手段と、

この送信手段で送信された駅務機器の故障発生通知を受信した無線携帯端末からの故障修理対応可の応答を受信する第2の受信手段と、

この第2の受信手段で各々の無線携帯端末から故障修理対応可の応答を受信した際、上記複数のアンテナの受信電波強度から各々の無線携帯端末の位置を特定する特定手段と、

この特定手段で特定された各々の無線携帯端末の位置を比較し、当該駅務機器の位置に最も近い位置にある無線携帯端末に対して故障修理の指示を通報する通報手段と、

を具備したことを特徴とする駅務機器故障通報システム。

【請求項10】 複数の無線携帯端末と駅務機器と無線基地局とが無線通信を行って駅務機器の故障を通報する駅務機器故障通報システムにおいて、

上記無線基地局が、

上記駅務機器の故障に修理対応する上記複数の無線携帯端末における個々の無線携帯端末の優先順位が予め記憶されている記憶手段と、

上記駅務機器から故障通知を受信する第1の受信手段と、

この第1の受信手段で駅務機器からの故障通知を受信した際、当該駅務機器の故障発生通知を上記記憶手段に記憶されている優先順位に従って上記複数の無線携帯端末に順次送信する送信手段と、

この送信手段で送信された駅務機器の故障発生通知を受

信した無線携帯端末からの故障対応可の応答を受信する第2の受信手段と。

上記第2の受信手段での受信に基づいて上記無線携帯端末に故障修理の指示を通報する制御を行う制御手段と、を具備したことを特徴とする駅務機器故障通報システム。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】この発明は、たとえば鉄道等の駅に設けられた自動券売機等の駅務機器に故障が発生した場合に通報対応する駅務機器故障通報システムと駅務機器故障通報システムの通報方法に関する。

【0002】

【従来の技術】従来、鉄道等の駅に設置された駅務機器に故障が発生すると、予め駅員に携帯させている無線端末に対して故障発生通知を一斉通報通信により送信し、各駅員に駅務機器の故障発生を知らせると共に故障修理を依頼している。

【0003】この時、複数の無線端末から（駅員から）応答があった場合には、一番最初に応答した端末（駅員）か、一定時間内に応答した端末（駅員）のうちの1つを無作為抽出するか、いずれかの方法により故障修理対応者を選択し、修理を指示する通知および詳細故障データを選択した端末（駅員）のみに送信している。

【0004】しかしながら、これらの選択方法では、故障した駅務機器からは遠い場所に居る駅員を選ぶ可能性があり、修理対応が遅れるといった欠点や、故障した駅務機器の修理に精通していない駅員を選んで修理に手間を取るといった欠点がある。

【0005】

【発明が解決しようとする課題】上記したように、駅務機器に故障が発生した場合に通報対応する駅務機器故障通報システムにおいて、故障した駅務機器からは遠い場所に居る駅員を選ぶ可能性があり、修理対応が遅れるといった欠点や、故障した駅務機器の修理に精通していない駅員を選んで修理に手間を取るといった問題があった。

【0006】そこで、この発明は、駅務機器に故障が発生した際に迅速で正確かつ手際よく修理対応を可能とする駅務機器故障通報システムと駅務機器故障通報システムの通報方法を提供することを目的とする。

【0007】

【課題を解決するための手段】この発明の駅務機器故障通報システムは、複数の無線携帯端末と複数の駅務機器と無線基地局とが無線通信を行って駅務機器の故障を通報する駅務機器故障通報システムにおいて、上記無線基地局が、上記複数の無線携帯端末と複数の駅務機器と無線通信を行うために複数設けられたアンテナと、これらのアンテナを介して上記駅務機器から故障通知を受信する第1の受信手段と、この第1の受信手段で駅務機器が

らの故障通知を受信した際、当該駅務機器からの故障通知を受信したアンテナを特定する第1の特定手段と、上記第1の受信手段で駅務機器からの故障通知を受信した際、当該駅務機器の故障発生通知を上記複数の無線携帯端末に送信する送信手段と、この送信手段で送信された駅務機器の故障発生通知を受信した無線携帯端末からの故障修理対応可の応答を受信する第2の受信手段と、この第2の受信手段で受信された各々の無線携帯端末から故障修理対応可の応答を受信したアンテナを特定する第2の特定手段と、上記第1の特定手段で特定されたアンテナと上記第2の特定手段で特定されたアンテナとを比較し、上記第1の特定手段で特定されたアンテナと一致するものがあればそのアンテナで受信した無線携帯端末に対して故障修理の指示を通報する通報手段とから構成されている。

【0008】この発明の駅務機器故障通報システムは、複数の無線携帯端末と複数の駅務機器と無線基地局とが無線通信を行って駅務機器の故障を通報する駅務機器故障通報システムにおいて、上記無線基地局が、上記複数の無線携帯端末と複数の駅務機器と無線通信を行うために所定位置に設けられた複数のアンテナと、これらのアンテナを介して上記駅務機器から故障通知を受信する第1の受信手段と、この第1の受信手段で駅務機器からの故障通知を受信した際、上記複数のアンテナの受信電波強度から当該駅務機器の位置を特定する第1の特定手段と、上記第1の受信手段で駅務機器からの故障通知を受信した際、当該駅務機器の故障発生通知を上記複数の無線携帯端末に送信する送信手段と、この送信手段で送信された駅務機器の故障発生通知を受信した無線携帯端末からの故障修理対応可の応答を受信する第2の受信手段と、この第2の受信手段で各々の無線携帯端末から故障修理対応可の応答を受信した際、上記複数のアンテナの受信電波強度から各々の無線携帯端末の位置を特定する第2の特定手段と、上記第1の特定手段で特定された当該駅務機器の位置と上記第2の特定手段で特定された各々の無線携帯端末の位置とを比較し、当該駅務機器の位置に最も近い位置にある無線携帯端末に対して故障修理の指示を通報する通報手段とから構成されている。

【0009】この発明の駅務機器故障通報システムの通報方法は、複数の無線携帯端末と複数の駅務機器と無線基地局とが無線通信を行って駅務機器の故障を通報する駅務機器故障通報システムの通報方法であって、上記無線基地局が、上記複数の無線携帯端末と複数の駅務機器と無線通信を行うために複数設けられたアンテナで上記駅務機器から故障通知を受信した際、当該駅務機器からの故障通知を受信したアンテナを特定すると共に当該駅務機器の故障発生通知を上記複数の無線携帯端末に送信し、この送信された駅務機器の故障発生通知を受信した無線携帯端末からの故障修理対応可の応答を受信し、この受信した各々の無線携帯端末から故障修理対応可の応

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 答を受信したアンテナを特定し、上記特定された当該駅務機器からの故障通知を受信したアンテナと上記各々の無線携帯端末から故障修理対応可の応答を受信したアンテナとを比較し、一致するものがあればそのアンテナで受信した無線携帯端末に対して故障修理の指示を通報するようにしたことを特徴とする。

【0010】この発明の駅務機器故障通報システムの通報方法は、複数の無線携帯端末と複数の駅務機器と、複数設けられたアンテナを介して無線基地局とが無線通信を行って駅務機器の故障を通報する駅務機器故障通報システムの通報方法であって、上記無線基地局が、駅務機器の故障通知を受信した際、この駅務機器の位置を上記複数設けられたアンテナの受信電波強度から特定し、当該駅務機器に故障が発生したことを上記複数の無線携帯端末に通知して無線携帯端末からの故障修理可の応答を受信し、この受信した各々の無線携帯端末の位置を上記複数設けられたアンテナの受信電波強度から特定し、上記特定された駅務機器の位置に最も近い位置にある無線携帯端末に故障修理の指示を通知するようにしたことを特徴とする。

【0011】この発明の駅務機器故障通報システムは、複数の無線携帯端末と複数の駅務機器と無線基地局とが無線通信を行って駅務機器の故障を通報する駅務機器故障通報システムにおいて、上記無線基地局が、上記複数の駅務機器における個々の駅務機器の故障に修理対応する上記複数の無線携帯端末における個々の無線携帯端末の優先順位が予め記憶されている記憶手段と、上記駅務機器から故障通知を受信する第1の受信手段と、この第1の受信手段で駅務機器からの故障通知を受信した際、当該駅務機器の故障発生通知を上記複数の無線携帯端末に送信する送信手段と、この送信手段で送信された駅務機器の故障発生通知を受信した無線携帯端末からの修理対応可の応答を受信する第2の受信手段と、上記記憶手段に記憶されている複数の駅務機器における当該駅務機器の故障に修理対応する無線携帯端末の優先順位を参照して、上記第2の受信手段で受信した各々の無線携帯端末から修理対応する最も優先順位の高い無線携帯端末に故障修理の指示を通報する制御を行う制御手段とから構成されている。

【0012】この発明の駅務機器故障通報システムは、複数の無線携帯端末と複数の駅務機器と無線基地局とが無線通信を行って駅務機器の故障を通報する駅務機器故障通報システムにおいて、上記無線基地局が、上記複数の無線携帯端末と無線通信を行うために所定位置に設けられた複数のアンテナと、上記駅務機器から故障通知を受信する第1の受信手段と、この第1の受信手段で駅務機器からの故障通知を受信した際、当該駅務機器の故障発生通知を上記複数の無線携帯端末に送信する送信手段と、この送信手段で送信された駅務機器の故障発生通知を受信した無線携帯端末からの故障修理対応可の応答を受信

した際、上記記憶手段に記憶されている複数の駅務機器における当該駅務機器の故障に修理対応する無線携帯端末の優先順位を参照して、受信した各々の無線携帯端末のうち最も優先順位の高い無線携帯端末に故障修理の指示を通報する制御を行う制御手段とから構成されている。

【0013】この発明の駅務機器故障通報システムの通報方法は、複数の無線携帯端末と複数の駅務機器と無線基地局とが無線通信を行って駅務機器の故障を通報する駅務機器故障通報システムの通報方法であって、上記無線基地局が、上記複数の駅務機器における個々の駅務機器の故障に修理対応する上記複数の無線携帯端末における個々の無線携帯端末の優先順位を予め記憶し、上記駅務機器から故障通知を受信した際、当該駅務機器の故障発生通知を上記複数の無線携帯端末に送信し、この送信された駅務機器の故障発生通知を受信した無線携帯端末からの修理対応可の応答を受信し、上記記憶されている複数の駅務機器における当該駅務機器の故障に修理対応する無線携帯端末の優先順位を参照して上記修理対応可の応答を受信した各々の無線携帯端末から修理対応する最も優先順位の高い無線携帯端末に故障修理の指示を通報する制御を行うようにしたことを特徴とする。

【0014】この発明の駅務機器故障通報システムの通報方法は、複数の無線携帯端末と複数の駅務機器と無線基地局とが無線通信を行って駅務機器の故障を通報する駅務機器故障通報システムの通報方法であって、上記無線基地局が上記複数の駅務機器における個々の駅務機器の故障に修理対応する上記複数の無線携帯端末における個々の無線携帯端末の優先順位を予め記憶し、上記駅務機器から故障通知を受信した際、当該駅務機器の故障発生通知を上記複数の無線携帯端末に送信し、この送信された駅務機器の故障発生通知を受信した無線携帯端末からの修理対応可の応答を受信した際、上記記憶されている複数の駅務機器における当該駅務機器の故障に修理対応する無線携帯端末の優先順位を参照して、受信した各々の無線携帯端末のうち最も優先順位の高い無線携帯端末に故障修理の指示を通報する制御を行うようにしたことを特徴とする。

【0015】この発明の駅務機器故障通報システムは、複数の無線携帯端末と駅務機器と無線基地局とが無線通信を行って駅務機器の故障を通報する駅務機器故障通報システムにおいて、上記無線基地局が、上記複数の無線携帯端末と無線通信を行うために所定位置に設けられた複数のアンテナと、上記駅務機器から故障通知を受信する第1の受信手段と、この第1の受信手段で駅務機器からの故障通知を受信した際、当該駅務機器の故障発生通知を上記複数の無線携帯端末に送信する送信手段と、この送信手段で送信された駅務機器の故障発生通知を受信した無線携帯端末からの故障修理対応可の応答を受信する第2の受信手段と、この第2の受信手段で各々の無線

携帯端末から故障修理対応可の応答を受信した際、上記複数のアンテナの受信電波強度から各々の無線携帯端末の位置を特定する特定手段と、この特定手段で特定された各々の無線携帯端末の位置を比較し、当該駅務機器の位置に最も近い位置にある無線携帯端末に対して故障修理の指示を通報する通報手段とから構成されている。

【0016】この発明の駅務機器故障通報システムは、複数の無線携帯端末と駅務機器と無線基地局とが無線通信を行って駅務機器の故障を通報する駅務機器故障通報システムにおいて、上記無線基地局が、上記駅務機器の故障に修理対応する上記複数の無線携帯端末における個々の無線携帯端末の優先順位が予め記憶されている記憶手段と、上記駅務機器から故障通知を受信する第1の受信手段と、この第1の受信手段で駅務機器からの故障通知を受信した際、当該駅務機器の故障発生通知を上記記憶手段に記憶されている優先順位に従って上記複数の無線携帯端末に順次送信する送信手段と、この送信手段で送信された駅務機器の故障発生通知を受信した無線携帯端末からの修理対応可の応答を受信する第2の受信手段と、上記第2の受信手段での受信に基づいて上記無線携帯端末に故障修理の指示を通報する制御を行う制御手段とから構成されている。

【0017】

【発明の実施の形態】以下、この発明の一実施の形態について図面を参照して説明する。

【0018】まず、第1実施例について説明する。

【0019】図1は、この発明の第1実施例に係る駅務機器故障通報システムの概略構成を示すものである。すなわち、駅務機器故障通報システムは、個々の駅員が携帯する無線携帯端末1、…、無線基地局2、駅に設置されている複数の駅務機器3、…、及び基地局アンテナ4とから構成されている。

【0020】図2は、無線携帯端末1の概略構成を示すものである。無線携帯端末1は、表示装置(DSP)11、入力装置(KE)12、制御装置(CPU)13、通信装置(COM)14、不揮発性記憶装置(NVM)15、及びブザー(BUZ)11aとから構成されている。

【0021】表示装置11は駅員に本無線携帯端末1の操作に必要な情報や無線基地局2から送られる情報を表示し、入力装置12は駅員の本無線携帯装置1への操作指示を入力し、通信装置14は無線基地局2との間での無線通信の制御を司り、不揮発性記憶装置15は本無線携帯端末1の端末IDを記憶し、ブザー11aはブザー音を出力し、制御装置13は前出の各装置を制御してデータの入出力と演算・比較処理を行う。

【0022】図3は、無線基地局2の概略構成を示すものである。無線基地局2は、記憶装置(MEM)16、制御装置(CPU:特定手段、通報手段)17、及び通信装置(COM:受信手段、送信手段)18とから構成

されている。また、無線基地局2には、通信装置18を介して上述した複数の基地局アンテナ4、…が接続されている。

【0023】記憶装置16は故障の発生した駅務機器3の駅務機器ID(識別子)・故障理由・受信アンテナID(識別子)を記憶し、通信装置18は無線携帯端末1・駅務機器3の間での無線通信の制御を司り、制御装置17は前出の各装置を制御してデータの入出力と演算・比較処理を行う。また、無線基地局2に通信装置18を介して接続される基地局アンテナ4は、無線通信の電波を送受信する。

【0024】図4は、無線基地局2の記憶装置16の構成例を示すものである。記憶装置16には、駅務機器ID38、故障理由39、受信アンテナID40とが1セットとして構成され格納される。図4においては、駅務機器ID38が「#M2」、故障理由39が「電源異常」、受信した基地局アンテナ4のIDである受信アンテナID40が「#A1」として格納されている。

【0025】図5は、駅務機器3の概略構成を示すものである。駅務機器3は、通信装置(COM)27、不揮発性記憶装置(NVM)28、制御装置(CPU)29、及び磁気カードリーダー26等から構成されている。

【0026】通信装置27は無線基地局2との間での無線通信の制御を司り、不揮発性記憶装置28は本機器の機器ID(識別子)を記憶し、制御装置29は標準構成の駅務機器3を含む前出の各装置を制御してデータの入出力と演算・比較処理を行う。

【0027】ところで、第1実施例に係る駅務機器故障通報システムにおいて、駅務機器3が設置される鉄道駅施設で使用する基地局アンテナ4は、駅施設の形状がプラットフォームを中心に細長いこと、及び地下施設やビル内施設を含む等電波の伝播条件が悪いことから、駅施設の小エリア毎に複数の台が設置されている。また、駅務機器故障通報システムでは、エリア間の移動に対して通信の連続性を保証するために、無線基地局2が常に無線携帯端末1、…の位置(どのエリア(=基地局アンテナ4の下)に居るか)を把握している。

【0028】本実施例では、上述した機構を利用して無線携帯端末1、…、及び故障した駅務機器3の位置を特定(把握)し、近い場所に居る駅員に故障修理の対応をさせ、故障修理の待ち時間を短縮するものである。

【0029】次に、このような構成において、第1実施例に係る駅務機器故障通報システムの動作を図6～図8のフローチャートを参照して説明する。

【0030】まず、図6において、複数設置されている駅務機器3、…の内の1つの駅務機器(例えば、駅務機器ID#M2)3に故障が発生したとする。

【0031】当該駅務機器3の制御装置29は、不揮発性記憶装置28に予め設定記憶されている駅務機器ID(#M2)を読み出し、駅務機器の故障理由と共に通信

装置27から無線基地局2に送信（故障通知）する（ST02）。そして、駅員が来て修理が完了するのを待ち（ST03）、修理が完了したらステップST01に戻る（ST04）。

【0032】一方、無線基地局2は駅務機器3からの故障通知を待ち（ST05）、上記駅務機器3から故障通知があった際（ST07）、無線基地局2の制御装置17は、通信装置18により受信した駅務機器ID（#M2）と故障理由とを記憶装置16の構成である駅務機器ID38、故障理由39に格納する（ST08）。さらに制御装置17は、上記駅務機器3からの故障通知を受信した基地局アンテナ4のID（例えば、#A1）を記憶装置16の構成である受信アンテナID40に格納する（ST10）。続いて制御装置17は、通信装置18から駅務機器（#M2）3の故障通知を全ての無線携帯端末1に対して一斉同報送信する（ST10）。

【0033】そして、各無線携帯端末1が無線基地局2からの故障待ち状態（ST12）から故障通知を受信した際（ST13）、次の動作へ移行する。

【0034】図7において、無線携帯端末1の制御装置13は、通信装置14により受信した駅務機器（#M2）3の故障内容を図9に示すように表示装置11に表示し、ブザー11aを鳴らして所持する駅員に入力装置12からのキー入力を指示する（ST18）。図9に示す表示装置11に表示したこの場合の表示例では、「#M2で故障が発生しました。修理対応できる方は、いずれかのキーをすぐに押して下さい。対応をお願いする方には、再度通知いたします。」としている。

【0035】無線携帯端末1の制御装置13は、入力装置12からのキー入力を15秒待ち（ST19）、15秒を経過した場合はステップST23に移行し、15秒以内にキー入力があれば（ST20、21）、不揮発性記憶装置15に予め設定されている当該無線携帯端末1のID（例えば、#T1）を読み出し、通信装置14から無線基地局2に送信し（ST22）、その後、表示装置11の表示を消してブザー11aの音を止める（ST23）。

【0036】無線基地局2の制御装置17は、ステップST10で一斉同報送信した後、20秒間無線携帯端末1、…からの応答を待ち（ST14）、応答がなく20秒が経過した場合はステップST10に戻り（ST15）、応答入力があった場合（ST16）、通信装置18から受信した無線携帯端末1の各々について受信した基地局アンテナ4のIDを特定し（例えば、無線携帯端末#T1は基地局アンテナ#A1、無線携帯端末#T3は基地局アンテナ#A2というように）、記憶装置16に格納されている駅務機器（#M2）3からの故障通知を受信した基地局アンテナ4のID（例えば、#A1）と比較する（ST17）。

【0037】図8において、無線基地局2の制御装置1

7は、比較結果が一致するものがなければステップST10へ戻り（ST24）、一致するものがあれば（ST24）、通信装置18から基地局アンテナ4のIDと一致した（例えば、#A1）した無線携帯端末（この例の場合、#T1）3に、記憶装置16に格納されている故障理由（例えば、電源異常）39を読み出して送信する（ST25）。

【0038】無線携帯端末（#T1）3は駅務機器3からの故障理由の通知を待ち（ST26）、駅務機器（#M2）3の故障理由通知を受信した際（ST27）、無線携帯端末（#T1）3の制御装置13は、通信装置14により受信した故障理由（電源異常）を図10に示すように表示装置11に表示し、ブザー11aを鳴らす（ST28）。図10に示す表示装置11に表示したこの場合の表示例では、「修理対応をお願いします。故障機器：#M2、故障理由：電源異常。キーを一度押すとブザーが止まります。もう一度押すと表示が消えます。」としている。

【0039】無線携帯端末（#T1）3の制御装置13は、当該無線携帯端末（#T1）3を所持する駅員による入力装置12からのキー入力を待ち（ST29）、入力があればブザー11aの音を止め（ST30）、もう一度キー入力があれば表示装置11の表示を消し（ST31、32）、ステップST11へ戻る。

【0040】以上説明したように上記第1実施例によれば、故障した駅務機器の設置位置と修理対応を申し出た駅員（無線携帯端末）の位置とを受信した基地局アンテナにより各々同定（受信した基地局アンテナを特定）し、故障した駅務機器からの通信を受信した基地局アンテナと一致する基地局アンテナから応答を受信した無線携帯端末（駅員）に対して修理対応を指示することにより、迅速な修理対応を可能とする。

【0041】次に、第2実施例について説明する。

【0042】図11は、この発明の第2実施例に係る駅務機器故障通報システムの概略構成を示すものである。すなわち、駅務機器故障通報システムは、個々の駅員が携帯する無線携帯端末6、…、無線基地局7、基地局アンテナ10、及び駅に設置されている複数の駅務機器8、…とから構成されている。なお、無線携帯端末6の構成は、図2に示す第1実施例の無線携帯端末1と同様であるので説明を省略する。

【0043】図12は、無線基地局7の概略構成を示すものである。無線基地局7は、記憶装置（MEM）20、制御装置（CPU：制御手段）21、基地局アンテナ10が接続される通信装置（COM：受信手段、送信手段）22、不揮発性記憶装置（HD：記憶手段）24、表示装置（DSP）25、及び入力装置（KB）26とから構成されている。

【0044】記憶装置20は故障の発生した駅務機器8の駅務機器ID（識別子）・故障理由を記憶し、通信装

図22は無線携帯端末6・駅務機器8の間での無線通信の制御を司り、不揮発性記憶装置24は後述する故障修理対応優先順位リストを記憶し、表示装置25は本無線基地局7の操作に必要な情報を表示し、入力装置26は本無線基地局7への操作指示を入力し、制御装置21は前出の各装置を制御してデータの入出力と演算・比較処理を行う。また、無線基地局7に通信装置18を介して接続される基地局アンテナ16は、無線通信の電波を送受信する。

【0045】図13は、無線基地局7の記憶装置20の構成例を示すものである。記憶装置20には、駅務機器ID41と故障理由42とが1セットで構成され格納される。図13においては、駅務機器ID41が「#M2」、故障理由42が「電源異常」として格納されている。

【0046】図14は、不揮発性記憶装置24に格納される故障修理対応優先順位リストの格納例を示すものである。不揮発性記憶装置24の故障修理対応優先順位リストは、駅務機器ID30、対応駅員ID31、所持端末ID32、対応優先順位33とから構成されている。

【0047】たとえば、駅務機器ID30が「#M1」の場合、対応駅員ID31が「#P1」で、所持端末ID32が「#T1」であり、対応優先順位33が1位である。また、駅務機器ID30が「#M2」の場合、対応駅員ID31が「#P1」で、所持端末ID32が「#T1」であり、対応優先順位33が2位であり、他にも駅務機器ID30が「#M2」の場合、対応駅員ID31が「#P2」で、所持端末ID32が「#T2」であり、対応優先順位33が1位であるものもある。

【0048】次に、このような構成において、第2実施例に係る駅務機器故障通報システムの動作を図15～図17のフローチャートを参照して説明する。

【0049】まず、図15において、複数設置されている駅務機器8、…の内の1つの駅務機器（例えば、駅務機器ID#M2）8に故障が発生したとする。

【0050】当該駅務機器8の制御装置29は、不揮発性記憶装置28に予め設定記憶されている駅務機器ID（#M2）を読み出し、駅務機器の故障理由と共に通信装置27から無線基地局7に送信（故障通知）する（ST34）。そして、駅員が来て修理が完了するのを待ち（ST35）、修理が完了したらステップST36に戻る（ST36）。

【0051】一方、無線基地局7は駅務機器8からの故障通知を待ち（ST38）、上記駅務機器8から故障通知があった際（ST39）、無線基地局7の制御装置21は、通信装置22により受信した駅務機器ID（#M2）と故障理由とを記憶装置20の構成である駅務機器ID41、故障理由42に格納する（ST40）。

【0052】続いて制御装置21は、不揮発性記憶装置24に格納されている図14で示した故障修理対応優先

順位リスト中の駅務機器ID30に、受信した駅務機器ID（#M2）と一致するものを検索して見つけ出し、対応する所持端末ID32を読み出す（ST41）。図14において、受信した駅務機器ID（#M2）に対応する所持端末IDは、「#T1」と「#T2」である。

【0053】制御装置21は、通信装置22から駅務機器（#M2）8の故障通知を、上記所持端末ID（#T1）と（#T2）の無線携帯端末6、6に送信する（ST42）。

【0054】無線携帯端末（#T1）6と無線携帯端末（#T2）6は、無線基地局7からの故障待ち状態（ST44）から故障通知を受信した際（ST45）、次の動作へ移行する。

【0055】図16において、無線携帯端末（#T1）6と無線携帯端末（#T2）6のそれぞれの制御装置13は、通信装置14により受信した駅務機器（#M2）8の故障内容を図9で示したように表示装置11に表示し、ブザー11aを鳴らして所持する駅員に入力装置12からのキー入力を指示する（ST50）。

【0056】上記それぞれの制御装置13は、入力装置12からのキー入力を15秒待ち（ST51）、15秒を経過した場合はステップST55に移行し、15秒以内にキー入力があれば（ST52、53）、不揮発性記憶装置15に予め設定されている当該無線携帯端末1のID（それぞれ#T1、#T2）を読み出し、通信装置14から無線基地局7に送信し（ST54）、その後、表示装置11の表示を消してブザー11aの音を止める（ST55）。

【0057】無線基地局7の制御装置21は、ステップST42で故障送信した後、20秒間無線携帯端末6、6からの応答を待ち（ST46）、応答がなく20秒が経過した場合はステップST42に戻り（ST47）、応答入力があった場合（ST48）、通信装置22により受信した無線携帯端末（#T1、#T2）6、6の各々について、故障した駅務機器ID（#M2）に関する対応優先順位を、不揮発性記憶装置24に格納されている図14で示した対応優先順位33から読み出し（#T1は2位、#T2は1位）、順位を比較する（ST47）。

【0058】図17において、無線基地局7の制御装置21は、優先順位の高い無線携帯端末6を修理対応とし、同一順位の場合には図12に示す対応優先順位33のリスト中の上にあるものを選び（ST56）、通信装置22から優先順位の高い無線携帯端末（#T2）6に、記憶装置20に格納されている故障理由（電源異常）39を読み出して送信する（ST57）。

【0059】無線携帯端末（#T2）6は無線基地局7からの故障理由の通知を待ち（ST58）、駅務機器（#M2）8の故障理由通知を受信した際（ST59）、無線携帯端末（#T2）6の制御装置13は、通

信装置14により受信した故障理由(電源異常)を図10に示すように表示装置11に表示し、ブザー11aを鳴らす(ST60)。

【0060】無線携帯端末(#T2)6の制御装置13は、当該無線携帯端末(#T2)6を所持する駅員による入力装置12からのキー入力待ち(ST61)、入力があればブザー11aの音を止め(ST62)、もう一度キー入力があれば表示装置11の表示を消し(ST63、64)、ステップST42へ戻る。

【0061】次に、駅務機器8毎の修理対応候補者を登録する動作を図18のフローチャートを参照して説明する。

【0062】無線基地局7の制御装置21は、表示装置25に図19に示す画面を表示してオペレータに、駅務機器1D34、対応駅員1D35、所持端末1D36、及び対応優先順位37の入力を指示し(ST66)、入力装置26からの入力待ち(ST67)。

【0063】制御装置21は、入力された際(ST68)、不揮発性記憶装置24に格納されている図14に示した故障修理対応優先順位リストにおける【駅務機器1D30、対応駅員1D31、所持端末1D32、対応優先順位33】に、入力された【駅務機器1D34、対応駅員1D35、所持端末1D36、対応優先順位37】と同じデータが登録されているか否かを検索する(ST69)。

【0064】制御装置21は、登録済みであれば(ST70)、故障修理対応優先順位リスト中の【駅務機器1D30、対応駅員1D31、所持端末1D32、対応優先順位33】が【駅務機器1D34、対応駅員1D35、所持端末1D36、対応優先順位37】と一致するデータの対応優先順位33をオペレータが入力した対応優先順位37に書き替える(ST71)。

【0065】また、制御装置21は、登録済みでなければ(ST70)、故障修理対応優先順位リストにオペレータが入力した【駅務機器1D34、対応駅員1D35、所持端末1D36、対応優先順位37】を追加する(ST71)。

【0066】以上説明したように上記第2実施例によれば、予め駅務機器毎に当該機器の修理に精通している駅員を修理専業度や習熟度に応じて、優先順位づけした上で登録しておき、登録された駅員のみにより修理対応を依頼することにより、正確かつ手際よく修理対応を可能とする。

【0067】なお、上述した第1実施例と第2実施例とを組み合わせ用いることも可能である。

【0068】以上説明したように上記発明の実施の形態によれば、第1実施例と第2実施例とから複数の駅員からの修理対応の申し出に際し、優先順位に基づいて対応駅員を選ぶことにより、迅速な修理対応と正確かつ手際

よく修理対応を可能とする。

【0069】

【発明の効果】以上詳述したようにこの発明によれば、駅務機器に故障が発生した際に迅速で正確かつ手際よく修理対応を可能とする駅務機器故障通報システムと駅務機器故障通報システムの通報方法を提供することができる。

【図面の簡単な説明】

【図1】この発明の第1実施例に係る駅務機器故障通報システムの概略構成を示すブロック図。

【図2】無線携帯端末の概略構成を示す図。

【図3】無線基地局の概略構成を示す図。

【図4】無線基地局の記憶装置の構成例を示す図。

【図5】駅務機器の概略構成を示す図。

【図6】第1実施例に係る駅務機器故障通報システムの動作を説明するためのフローチャート。

【図7】第1実施例に係る駅務機器故障通報システムの動作を説明するためのフローチャート。

【図8】第1実施例に係る駅務機器故障通報システムの動作を説明するためのフローチャート。

【図9】表示装置に表示した表示例を示す図。

【図10】表示装置に表示した表示例を示す図。

【図11】この発明の第2実施例に係る駅務機器故障通報システムの概略構成を示すブロック図。

【図12】無線基地局の概略構成を示す図。

【図13】無線基地局の記憶装置の構成例を示す図。

【図14】不揮発性記憶装置に格納される故障修理対応優先順位リストの格納例を示す図。

【図15】第2実施例に係る駅務機器故障通報システムの動作を説明するためのフローチャート。

【図16】第2実施例に係る駅務機器故障通報システムの動作を説明するためのフローチャート。

【図17】第2実施例に係る駅務機器故障通報システムの動作を説明するためのフローチャート。

【図18】駅務機器毎の修理対応候補者を登録する動作を説明するためのフローチャート。

【図19】表示装置に表示した表示例を示す図。

【符号の説明】

1、6…無線携帯端末

2、7…無線基地局

3、8…駅務機器

4、10…基地局アンテナ

11、25…表示装置

12、26…入力装置

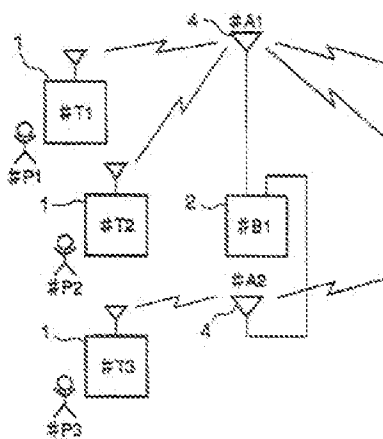
13、17、21、29…制御装置

14、18、22…通信装置

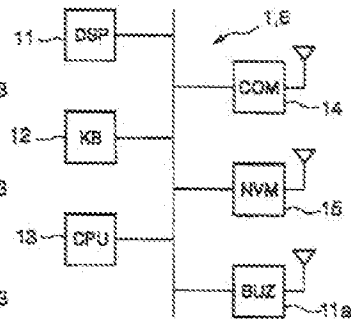
15、24…不揮発性記憶装置

16、20…記憶装置

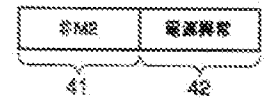
【図1】



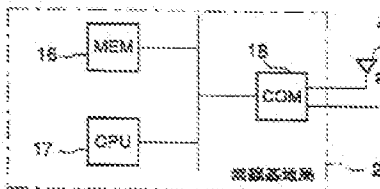
【図2】



【図13】



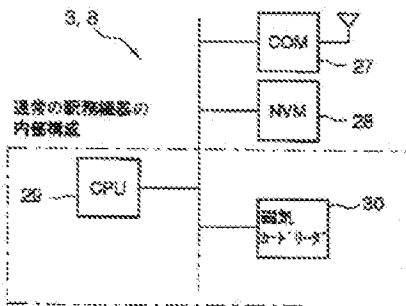
【図3】



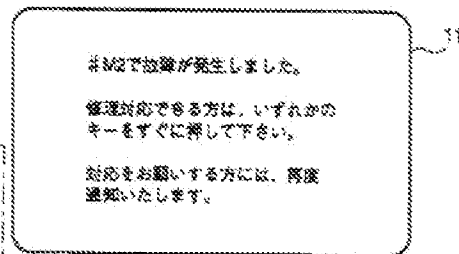
【図4】



【図5】

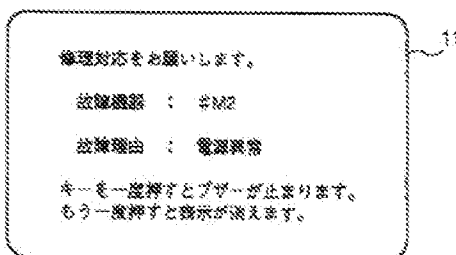


【図9】



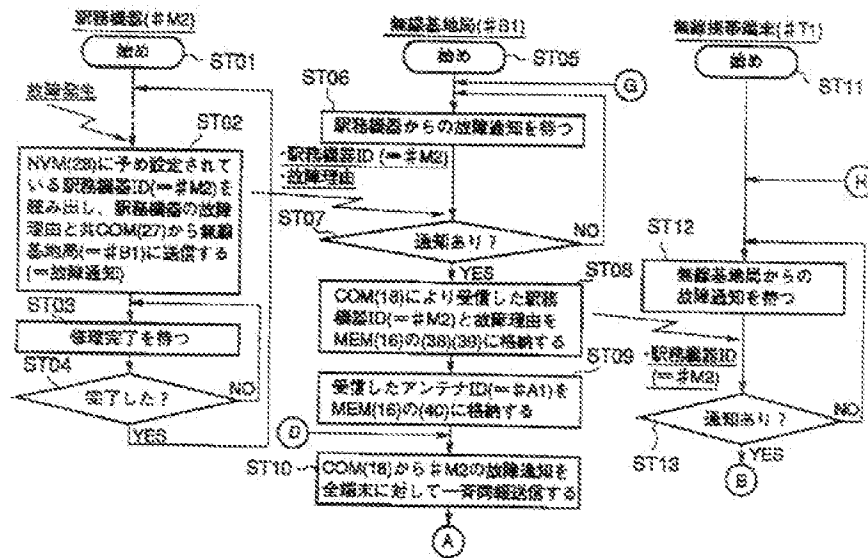
【図14】

【図10】

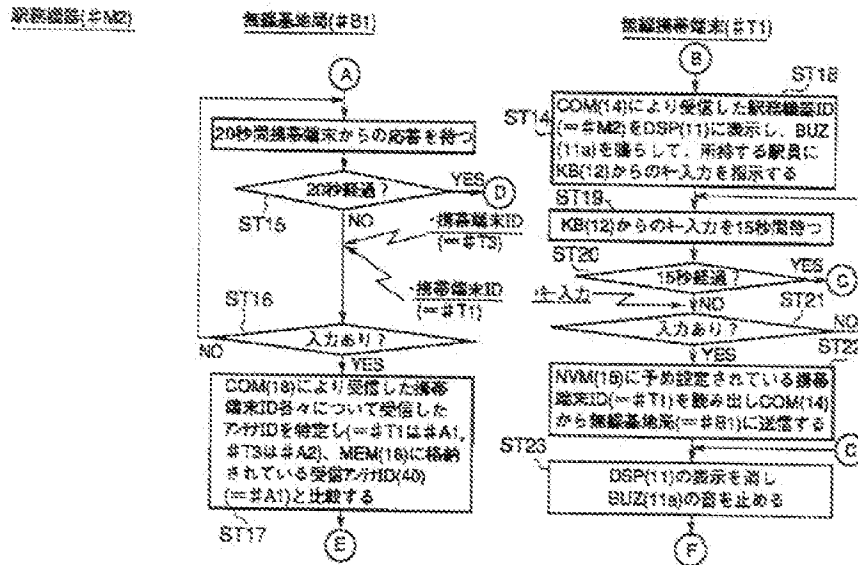


新機識別ID	対応製品ID	所持機ID	対応優先順位
#M1	#P1	#T1	1
#M1	#P3	#T3	2
#M2	#P1	#T1	2
#M2	#P2	#T2	1
#M3	#P1	#T1	1
#M3	#P3	#T3	2

【図6】



【図7】



【図19】

下記の各項目を入力して下さい。

駅務端末ID : #M2

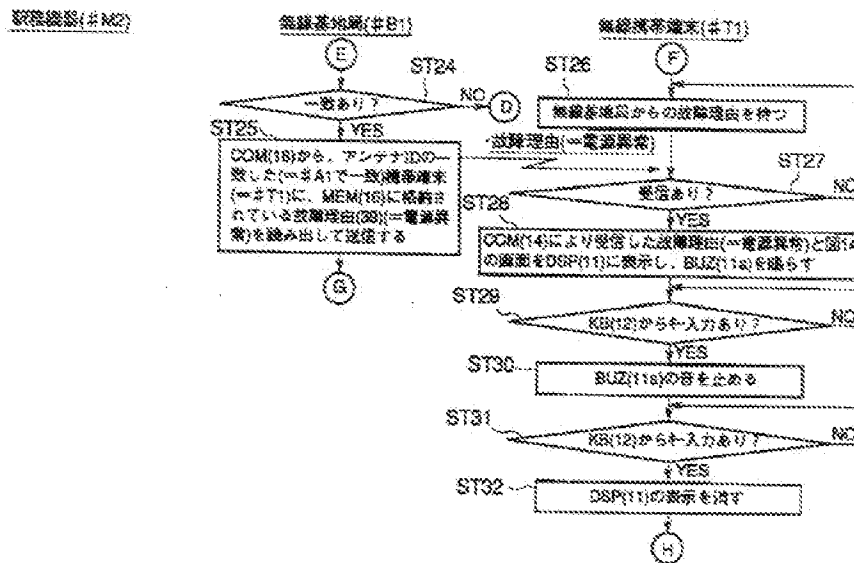
対応駅員ID : #P3

所持端末ID : #T3

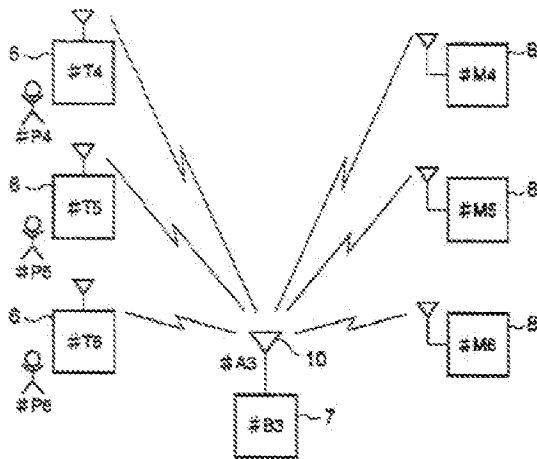
対応優先順位 : 2

入力は終了しましたか? Y

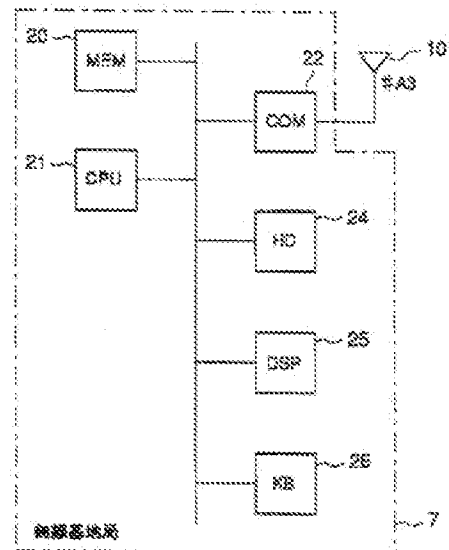
【図8】



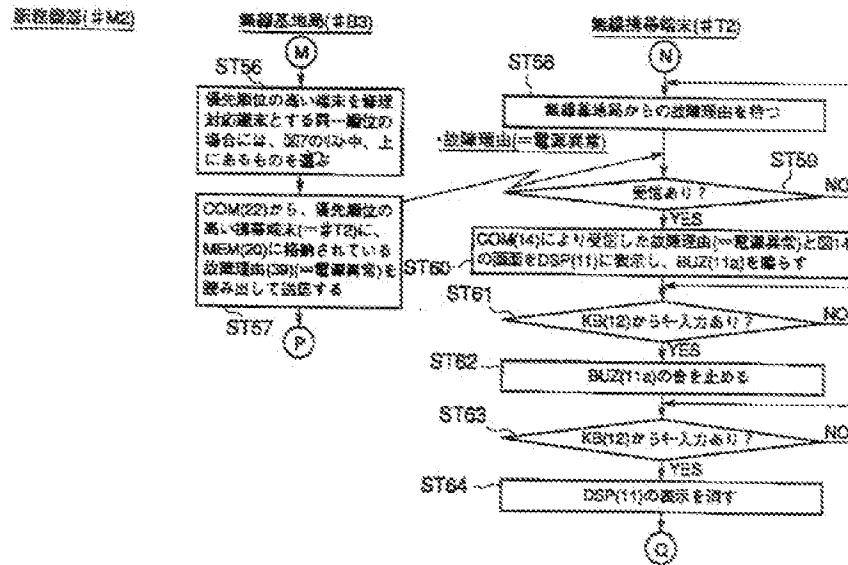
【図11】



【図12】



【図17】



【図18】

